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Nevins, Robert P., LTJG, Medical Service Corps, United States Navy

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34800 Bob Wilson Drive
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US Army Medical Department Center and School
BLDG 2841 MCCS-HFB (Army-Baylor Program in Healthcare Administration)
3151 Scott Road, Suite 1411
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Despite the existence of office systems that can be used for automation, Naval Medical Center San Diego (NMCSD) continues to utilize paper based immunization records which do not always accurately report patient immunization status. The practice of using multiple forms to record immunization data has led to problems in determining individual immunization needs during outpatient visits. Providers often miss opportunities to vaccinate during primary care encounters due to scattered, inaccurate or missing immunization records. This strategic analysis proposes that NMCSD implement the adaptive strategy of enhancement. Under enhancement, NMCSD should implement a new process to check immunization using AHLTA during every patient visits. It is also proposed that the NMCSD form an alliance with NMCP and NNMC in order pool all the resources to ensure successful implementation of the enhancement strategy. Finally, this analysis also proposes that NMCSD adopt a strategic posture as a prospector in order to better respond to changes in the environment.

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Strategies to Make Immunization Status Visible During Patient Encounters at Naval Medical Center San Diego

Presented to LTC Robert Griffith, MBA

In partial fulfillment of the requirements for

HCA 5661 - Administrative Residency

By

LTJG Robert P. Nevins

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THANK YOU for keeping our home "afloat". I will be forever grateful. I love you so much!

To my children Alex, Gabe and Joshua

You are and will always be my greatest pride and accomplishment.

Disclaimer

The opinions or assertions expressed in this paper are those of the author and are not to be construed as reflecting the official policy or position of Baylor University, Army-Baylor University Graduate Program in Health and Business Administration, U.S. Army Medical Command, Naval Medical Center San Diego, Department of the Army, Department of the Navy, Department of Defense, or the U.S. Government.

Ethical Considerations

No personal identifying information was used during this study. The author declares no conflict of interest or financial interest in any product or service mentioned in this paper.

Executive Summary

Despite the existence of office systems that can be used for automation, Naval Medical Center San Diego (NMCSD) continues to utilize paper based immunization records which do not always accurately report patient immunization status. The practice of using multiple forms to record immunization data has led to problems in determining individual immunization needs during outpatient visits. Providers often miss opportunities to vaccinate during primary care encounters due to scattered, inaccurate or missing immunization records. This strategic analysis proposes that NMCSD implement the adaptive strategy of enhancement. Under enhancement, NMCSD should implement a new process to check immunization using AHLTA during every patient visits. It is also proposed that the NMCSD form an alliance with NMCP and NNMC in order pool all the resources to ensure successful implementation of the enhancement strategy. Finally, this analysis also proposes that NMCSD adopt a strategic posture as a prospector in order to better respond to changes in the environment and more specifically, those involving public health and immunizations.

INTRODUCTION

Immunizations have long been considered the greatest medical success in the public health arena. Vaccines have reduced infectious disease occurrences in all segments of the population. Routine immunization has eradicated smallpox; led to the near elimination of wild poliovirus; reduced preventable infectious diseases to an all-time low; and minimized the number of people that experience the devastating effects of measles, pertussis and other illnesses. They also save billions of dollars in health costs annually (Centers for Disease Control and Prevention, 1996).

Immunization is a cost-effective and widely accepted means of preventing diseases, and is recommended for all age-groups and those with chronic health problems who are particularly susceptible to infectious diseases. Medical advances in technology have made it possible to produce effective and safe immunizations to protect the population against preventable diseases. However, some age-groups such as adults, continue to be adversely affected by vaccine preventable diseases due to the lack of vaccination programs focusing on improving vaccination rates (Centers for Disease Control and Prevention, 1996). Moreover, vaccination rates are severely affected because providers often miss opportunities to vaccinate and educate patients on the importance of immunization as part of their care

during primary care visits. While there are many reasons for these missed opportunities, the most common is the lack of an adequate process to ensure that immunization status is visible during patient encounters.

Conditions that prompted the study

Immunizations in a military healthcare facility are provided free of charge. It is therefore expected that the military population has the highest vaccination rates in the United States. This is true for active duty personnel as policies are in place to increase military readiness and improve the accurate reporting of immunization data. For military personnel using the Naval Medical Center San Diego (NMCSD), this was made possible by using the Shipboard Non-Tactical ADP Program (SNAP) Automated Medical System (SAMS) as the main repository for immunization data at Naval Medical Center San Diego. SAMS serves as the primary tool for reporting and tracking immunizations for Navy and Marine Corps active duty personnel.

However, the use of SAMS is not extended to non-active duty beneficiaries. In addition, NMCSD has no process in place to automate immunization records that would provide accurate reporting and tracking of immunization data for non-active duty beneficiaries. Despite the existence of office systems that can be used for automation, NMCSD continues to utilize paper based

immunization records which do not always accurately report patient immunization status. The practice of using multiple forms to record immunization data has led to problems in determining individual immunization needs during outpatient visits. Providers often miss opportunities to vaccinate during primary care encounters due to scattered, inaccurate or missing immunization records.

Statement of the Problem or Question

The research question for this study is how to make vaccination status visible during patient primary encounters among non-active duty beneficiaries at Naval Medical Center San Diego.

Literature Review

Many studies have focused on strategies for implementing guidelines to improve vaccination rates. In general, these studies focused on processes to make immunization status visible during patient visits to ensure that missed opportunities to vaccinate are minimized. A 1999 report released by the Infection Disease Control Subcommittee of the Armed Forces Epidemiological Board emphasized the need to automate immunization records across the Department of Defense (DOD) to determine immunization status and force readiness (Poland, 1999). This report recommended that the DOD develop computerized recordkeeping and

tracking of both adult and childhood immunizations for all categories of beneficiaries.

Nowalk, Zimmerman, and Faghali (2004) examined missed opportunities to immunize adults in diverse primary care settings. They found that missed opportunities to immunize adults more than 65 years of age in these settings resulted from a "…failure to discuss vaccination and to vaccinate at acute care visits…" (3460). After analysis of their findings, these researchers concluded that a "failure to educate and vaccinate during acute care visits, and schedule preventive care visits are obstacles to achieving national adult immunization goals (2004: 3460).

In a similar study conducted on older adults in general primary care settings, Zimmerman, Nowalk, and Bruehlman (2005: 24) concluded that "…missed opportunities to vaccinate occur frequently…" and are not unusual in these types of settings. These researchers suggested that missed opportunities can be avoided if immunization status is assessed and recorded during each patient visit without exception. In doing so, providers are able to conveniently educate the patients that immunization is an integral part of their care.

Zimmerman and colleagues (2005) further concluded that missed opportunities to vaccinate adults seen at acute care visits, chronic care visits and hospital discharge are

additional reasons for such low immunization rates. To support their conclusions, they cited a retrospective study of patients discharged with a diagnosis of pneumonia that revealed while 61 to 62 percent had been hospitalized within the four preceding years and 87 percent of these patients had one or more high risk conditions recognized during the previous admissions that indicated the need for pneumococcal vaccine. Had these patients been vaccinated during one of these events, they proposed, it is possible that many of them would not have contracted pneumonia. This is a classic example of the impact of missed opportunities when immunization was clearly indicated. Zimmerman and colleagues explained that these types of situation can be prevented by healthcare professionals. They recommended proactive office systems, provider-oriented prompts and standing orders as ways for providers to reduce missed immunization opportunities.

The benefits of instituting interventions to ensure that missed opportunities are avoided and patients are immunized in a timely manner have also been widely documented. Guyer, Smith, and Chalk (2000) in a study on childhood immunizations, echoed the obvious benefits of avoiding missed opportunities to vaccinate. These researchers stated that the "...amount of preventable illnesses and subsequent complications that result from missed vaccines carry a high and avoidable cost for

individuals and society as whole…" (2000:6). They further stated that "…between 50,000 and 70,000 adults and about 300 children die annually in the Unites States from vaccine-preventable diseases or their complications…"(2000:6).

The statistics surrounding missed opportunities to vaccinate children alone can be staggering. According to one study, the standard childhood immunization program prevents approximately 10.5 million cases of infectious illnesses a year and 33,000 deaths in the United States (Zhou, Santoli, Messonier, Yusuf, Shefer, Chu, Rodewald, & Harpaz, 2003). Another report published by the World Health Organization, UNICEF and World Bank found that three million lives are saved worldwide each year through childhood immunizations, a number that could be doubled with increased funding (Trick, 2002).

In addition to saving lives and improving quality of life, immunization generates significant economic benefits. According to an extensive cost-benefit analysis by the Center for Disease Control (CDC), every dollar spent on immunization saves $6.30 in direct medical costs, with an aggregate savings of $10.5 billion in the United States alone. When including indirect cost to society, a measurement of losses due to missed work, death and disability as well as direct medical costs, the CDC notes that every dollar spent on immunization saves $18.40 for a societal aggregate savings of $42 billion (Rapoport, 2003).

Bumpers, Hearne, Segal, Unruh, Pisani, and Zavolinsky (2004) supported the CDC's reports by stating that numerous cost-benefits analyses show that vaccination against the most common childhood diseases delivers large returns on investment. They agreed with the CDC's savings estimates, but concluded that the savings could be even greater than what CDC offered.

Purpose

The purpose of this study is to identify strategies to make vaccination status visible during patient encounters at Naval Medical Center San Diego. This study will benefit non-active duty beneficiaries.

Methods and Procedures

Strategic analysis will be the primary method used in this project. This method will allow for a thorough analysis of the organizational strengths and weakness in addition to the important internal and external factors that may influence the plan to improve immunization practices at NMCSD.

The study will begin with a comprehensive situational analysis of the general and health care environmental conditions in which NMCSD operates. The goal of environmental analysis is to identify the general and health care industry issues and the various changes that are occurring outside of the organization (Swayne, Duncan & Ginter, 2006). The information gathered will be used for internal analysis and formulation of strategy to

improve immunization practices during patient encounters. Expert opinion and stakeholder analysis are the two tools that will be used during this part of the strategic analysis. Expert opinion is the process of soliciting opinions from known experts within the organization (Swayne, Duncan & Ginter, 2006). These experts will play an integral role in identifying key issues critical to the selection of the ideal strategy. Stakeholder analysis is the process of identifying the organizations, groups, and individuals that have interest or "stake" in the success of an organization (Swayne, Duncan & Ginter, 2006: 82).

The project will continue with a service area competitor analysis. The focus of this section of the project is not for competitive reasons as is customary with strategic analyses. Rather, this section will be used to specifically identify organizations to benchmark.

The project will also include an internal analysis that will be accomplished using a Strength, Weakness, Opportunity, and Threat (SWOT) framework. This tool will analyze the functions within the NMCSD command immunization program to develop and evaluate a list of strengths and weaknesses (Swayne, Duncan & Ginter, 2006). Building on the list created, the value chain will be used to specifically address the process that will add more value to the command immunization program as perceived by all stakeholders.

The mission, vision, values and strategic goals of NMCSD will be discussed as part of the directional strategy analysis. This is important because directional strategies are what drives decision-making and is the organization's reason for existence. This project will attempt to relate the topic as a subordinate goal to NMCSD directional strategies.

Finally, this project will identify, explain, and evaluate potential alternatives that NMCSD can pursue to automate its immunization program. A proposed strategy map will then be explained. In terms of service and support delivery strategies, this project will describe in particular changes that NMCSD needs to make in order to support the selected strategy. Lastly, the project will describe a specific action plan to execute the strategy.

Utility of Results

This study is expected to yield evidence-based strategies aimed at making immunization status visible during patient encounters. Because delivery of immunization services is an ongoing challenge for providers, the strategies produced can be used as specific interventions in order to improve immunization coverage for all beneficiaries at NMCSD and other navy medical facilities. The implication of such improvement is immense, as it will further reduce and eliminate vaccine-preventable causes of morbidity and mortality.

SITUATIONAL ANALYSIS

External Environment

Naval Medical Center San Diego faces challenges daily as it works to identify changes in the external environment that have occurred or are expected to occur in the future. In doing so, a plan for the future can be created in order to respond to changes that affect the quality of healthcare services provided to the patients. To improve the delivery of immunization services, certain environmental conditions have to be considered and analyzed for their impact upon delivery of vaccinations to important segments of the population.

Assessing the rapid environmental changes is paramount as it will provide the leadership an understanding on the issues that will potentially provide the background for developing a strategy. The success of any quality endeavor depends largely on the leadership's ability to anticipate and respond to these changes. Ultimately, any plan to solve a strategic issue has to include an essential element to scrutinize the external environment prior to setting specific goals and objectives. Strategic thinking should be directed towards positioning the organization within its external environment (Swayne, Duncan & Ginter, 2006). NMCSD must respond to dynamic shifts taking place within its environment to ensure a smooth transition between planning and implementation of any strategy.

Information concerning the environment is seldom obvious in its implications. Assessing the environment is a process that is largely subjective and therefore judgmental. According to Swayne, Duncan, and Ginter (2006), "...the assessment process includes evaluation of the significance of the extended issue on the organization; identification of the issues that must be considered in the internal analysis; development of the vision and mission; and formulation of the strategic plan..." (75).

Different strategic thinking frameworks and tools may be used to examine the general and healthcare environments. These tools are informal and simple, and are often described as speculative and conjectural (Swayne, Duncan & Smith, 2006). For the purposes of this study, two tools or frameworks will be used to scan the environment and identify major environmental issues that affect the command in general, and particularly the command immunization program.

Expert Opinion

One of the tools that will be used to examine the environment is expert opinion. This method is used to identify, monitor and forecast, and assess environmental trends. Expert opinion is appropriate in this case since the overarching area from which the topic of this study was obtained is preventive health and immunization, areas that are highly specialized and technical in nature. Although the study focuses more on strategy

and business aspect, technical opinion from expert sources is essential to accurately identify major environmental issues that can influence the delivery of immunization services. Expert opinion will be collected via a modified Delphi technique.

Three experts from NMCSD were identified to provide five major issues that they believe are of most concern to the command immunization program. The three experts were: (1) CAPT John Tueller, Preventive Medicine Physician and the Department Head of Preventive Medicine, (2) CDR Philip Smith, Industrial Hygienist and Director of Public Health, and (3) LCDR (ret) Tracy Lopez, a retired nurse and currently the Command Immunization Program Manager. The issues were then emailed to each other including myself. Eleven total issues excluding duplicates were identified. Each expert was asked to rank them by order of importance. The ranking was then tabulated. A meeting was conducted to finally identify the issues to be examined in the analysis. A roundtable discussion ensued. The main question that was considered at the outset was which five issues posed the most substantial challenge to the command immunization program. Eventually, the issues picked were the same issues that ranked high on the initial email exchange. The three experts settled on the following five major issues: (1) economic and budgetary concerns, (2) advances in immunization, (3) vaccine standards, (4) Navy Medicine requirements, and (5)

technological issues, particularly issues relating to the Armed Forces Health Longitudinal Technology Application (AHLTA). These issues will be discussed next in detail.

(1) Economic and Budgetary Concerns. Today's economic environment makes it very difficult for NMCSD to foresee the future. As with other military treatment facilities, NMCSD expects to see modifications in the fiscal budget as well as the usual force structure and manpower changes that have become standard budgetary realities over the past several years. Operational difficulties and uncertainties will continue to pose continuing challenges in the delivery of care to military beneficiaries. The military medical departments will be required to cut costs yet deliver the same high degree of quality of care. For example, military healthcare facilities are being tasked to find efficiencies in the system to the tune of $248 million in FY 08. (CQ Transcription Wire, 2007).

Additionally, the prospective payment system (PPS), a new financial resourcing system, is now in place to incentivize local commanders to focus on outputs rather than on historical budgeting. The purpose of this new resourcing system is to ensure that hospitals and clinics remain high quality, highly efficient medical institutions in service to patients. In line with this new resourcing system, NMCSD has pursued a progressive posture to examine and evaluate existing processes in order to

maximize output, thus improving its ability to justify budget requests under PPS.

(2) Advances in Immunization. A number of new vaccines with major potential for controlling infectious diseases have just been licensed or are at advanced stages of development. Among the illnesses targeted are pneumococcal disease and cervical cancer (as caused by human papillomavirus).

Acute lower respiratory infections are responsible for close to two million deaths worldwide per year and a large proportion of these are caused by *Streptococcus pneumoniae* (World Health Organization, 2006). A Wyeth-developed seven-valent conjugate vaccine called Prevnar (or Prevenar) is designed to act against seven strains of pneumococcal disease. While Wyeth has licensed the new vaccine in the United States and over 70 other countries, this vaccine does not include the two serotypes (types 1 and 5) that cause a high percentage of pneumococcal illness in developing countries (World Health Organization, 2006). Conjugate vaccines, which have proven to be highly effective, are made by linking purified polysaccharides (complex sugars) from the coat of a disease-causing bacterium to a protein "carrier." In the United States, use of this vaccine has led to a dramatic decline in rates of pneumococcal disease not only in immunized children but also in the immuno-

compromised and underimmunized population through reduced transmission (World Health Organization, 2006).

Sexually transmitted HPV is the major cause of cervical cancer, the most common cause of cancer deaths among women. About 500,000 cases worldwide occur each year, with nearly 80% of these in developing countries (World Health Organization, 2006). Cervical cancer kills some 240,000 women annually (World Health Organization, 2006). Gardasil, an HPV vaccine recently licensed by Merck, covers four types of HPV, including the cancer-causing types 16 and 18 and types 6 and 11 for non-cancerous genital warts (World Health Organization, 2006). A second vaccine, developed by GSK, covers HPV types 16 and 18 alone and is expected to be licensed in 2007 (World Health Organization, 2006). HPV types 16 and 18 cause around 70% of HPV cervical cancers globally, but the vaccines in development will not cover the 30% of cancers attributed to other HPV types. Because these other types are numerous and individually only contribute a small percentage, significantly expanding vaccine coverage against them may present technical challenges for manufacturers. The duration of the immunity conferred by the vaccines is not yet known and only time and follow up studies will provide this critical information. Other clinical studies are planned that will look at alternative schedules and possibly lowering the age of vaccination. Because HPV is spread by sexual

contact, and the high-risk years for infection are roughly from ages 18 to 25, the best subjects for vaccination will likely be pre-adolescents or adolescents, unlike for traditional vaccination programs, which are aimed mostly at infants and pregnant women (World Health Organization, 2006).

(3) Vaccine Standards. The national goals of Healthy People 2010 (U.S. Department of Health and Human Services, 2000) include the reduction of disease and death due to infectious diseases, including vaccine-preventable diseases. Achievement of these goals requires implementation of current guidelines for the universally recommended vaccines for children and adults and implementation of standards for child and adolescent and for adult immunization practices. The guidelines and standards have been developed and/or endorsed by other major organizations in both the public and private sectors of medicine (as relevant to their constituencies), including the US Department of Health and Human Services, the American Academy of Pediatrics, the American Academy of Family Physicians, and the American College of Physicians/American Society for Internal Medicine (Centers for Disease Control, 1996).

The delivery and acceptance of recommended immunizations is an ongoing challenge for health care professionals and health care and public health systems. Barriers to successful immunization of children and adults include: (1) inadequate

access, (2) high out-of-pocket cost of and low reimbursement rates for vaccines and their administration, (3) misconceptions of health care professionals, patients, and parents about the severity of vaccine-preventable diseases, (4) the safety of current vaccines, (5) current vaccination recommendations (6) valid precautions and contraindications to vaccination, and (7) the fragility of the vaccine supply. Also important are the missed opportunities for administering vaccines during all patient visits, including ambulatory care visits and hospitalizations. These missed opportunities often reflect the lack of organized practice-based and hospital-based programs to promote immunization.

The standard for immunization of children, adolescents and adults can be seen on Appendices A and B. The schedule is approved each year by the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC)(Centers for Disease Control, 1996).

(4) Navy Medicine. The Navy Bureau of Medicine and Surgery is the headquarters command for all Navy Medicine. Under the leadership of the Navy Surgeon General, Navy Medicine provides high quality, economical health care to beneficiaries in wartime and in peacetime. Highly trained Navy Medicine personnel deploy with Sailors and Marines worldwide, providing critical mission support aboard ship, in the air, and on the

battlefield. At the same time, Navy Medicine's military and civilian health care professionals are providing care for uniformed services' family members and retirees at military treatment facilities around the globe.

In 2004, BUMED released guidelines to provide immunization requirement and recommendations and to introduce adult and child immunization records. This guideline is currently known as BUMEDNOTE 6230 (Appendix C). Under BUMEDNOTE 6230, the Surgeon General recommends that all commands conduct periodic review of immunization practices to ensure compliance of current standards of care and documentation. In addition, it is also recommended that immunization status is reviewed as part of all patient visits when vitals signs are obtained and documented. This communication also required healthcare providers to document vaccine related information in three locations: (1) on the PHS 731 (Yellow Card), (2) in an electronic database, and (3) in the appropriate location in the health record jacket.

(5) Technological Changes. The DOD Military Health System (MHS) developed AHLTA as the military health care system's electronic medical record in response to the President's Executive Order 13335 of 27 April 2004 (Appendix D). This order established a National Coordinator for Health Information Technology and set a goal for the majority of Americans to have interoperable electronic health record within 10 years. Military

Medicine is leading this effort by completing the implementation of AHLTA for Uniformed Services members, retirees and their families by 2011. AHLTA gives healthcare providers access to data about beneficiaries' conditions, prescriptions, diagnostic tests and additional information essential to providing quality care (Health Affairs, 2007)

In 2006, the Navy Surgeon General signed a memorandum to establish Nay Medicine policy and use of AHLTA. Under this memorandum, AHLTA has officially become Navy Medicine's primary shore based electronic medical record. The policy requires that regional commanders and shore based MTF Command ding Officers are responsible to ensure maximum use of AHLTA to document outpatient care. Once AHLTA is fully integrated at an MTF, the system will be used as the main database to record and capture beneficiary immunizations.

NMCSD began deployment of in January 2005 and is currently at 100% utilization across all areas. This new enterprise-wide information system will offer providers with a real-time, secure, comprehensive, and accessible longitudinal outpatient health record in support of more than 9 million eligible beneficiaries. As this deployment progresses, NMCSD leadership is presented with the challenge and opportunity to understand the impact this application will have on business processes. Implementation of an electronic medical record will bring

significant changes to the way health information is managed. Military health records are currently paper-based and their handling and administration is guided by written policy.

Stakeholder Analysis

The second major tool that will be used to analyze the environment is stakeholder analysis. Stakeholder analysis is based on the "...belief that there is a reciprocal relationship between the organization and certain organizations, groups and individuals..." (Swayne, Duncan & Ginter, 2006). These entities are referred to as stakeholders as they have an "interest" or "stake" in the success or failures of the organization. Stakeholders are classified into three categories: internal, interface, and external. Internal stakeholders are part of the organization such the managers and employees. They operate within the bounds of the organization. Interface stakeholders are those that functions both internally and externally in relations to the organization (Swayne, Duncan & Ginter, 2006). Examples are corporate officers of the parent company. External stakeholders are groups or individuals that operate outside of the organization but play a vital role for them. Examples are suppliers, regulatory agencies and third-party payors (Swayne, Duncan & Ginter, 2006). Figure 1 shows the analysis done on NMCSD as it relates to the Command Immunization Program. An

explanation of the important aspects of the stakeholder analysis is described following Figure 1.

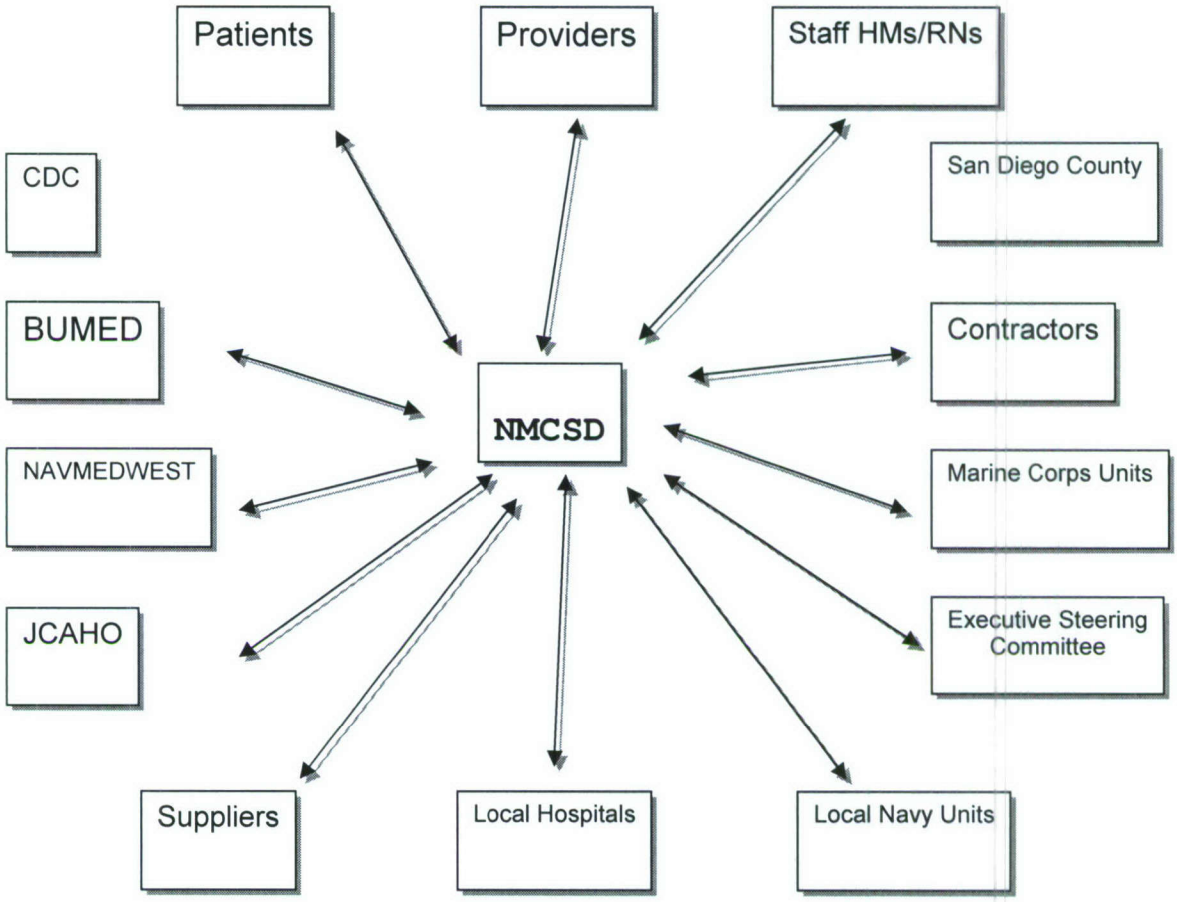

Figure 1: NMCSD Stakeholder Analysis

The key internal stakeholders are the providers, corpsmen and nurses. These groups will play a critical role in the successful implementation of strategies identified. The process to make sure that a patient's immunization status is checked will directly involve the physicians, nurses and corpsmen as they provide care to the patients. It is also important that these stakeholders are involved in the strategic planning

process because they are the process owners, which means that they can contribute tremendously in the decision-making process. The other key internal stakeholder is the Executive Steering Committee.

The most important interface stakeholder is BUMED. This organization is the main command from which the hospital is ultimately under authority. All changes in terms of regulations and policies come from BUMED to NAVMEDWEST and finally to the facility.

In terms of external stakeholders, the patients are the most critical. They are the reason why this strategic analysis exists in the first place. Anything and everything that this facility does and will do in the future impact the patients in every way possible. They will be most affected in the creation and improvement of any process involving the delivery of immunization services at Naval Medical Center San Diego. The other external stakeholders are JCAHO, San Diego County, Contractors, Marine and Local Navy Units, Local Hospitals, Suppliers and the CDC.

Summary of Environmental Analysis

Individually the expert opinion and stakeholder analysis provides different perspectives concerning the issues that affect the delivery of immunization services at Naval Medical Center San Diego. This facility will benefit from knowing its

stakeholders as well as taking advantage of the corporate knowledge possessed by the experts. Collectively the key aspects of the environment that are important in this project include the following: economic and budgetary concerns, advances in immunization, vaccine standards, Navy Medicine and technological changes.

Service Area Analysis

Service area analysis is a "…process of understanding the market and identifying and evaluating competitors…" (Swayne, Duncan & Ginter, 2006). A typical service area analysis focuses in examining both the market and competitors in order to gain advantage by capturing as many customers as possible to increase profits. Companies spend significant amounts of time to research new market opportunities. In order to gain the upper hand against competitors, it becomes necessary to analyze what the competition is doing right and what they are doing wrong.

For the purposes of this research, service area analysis will focus only on the other two navy medical facilities that, in addition to NMCSD, constitute the "Big Three" of Navy Medicine. As previously discussed in the Methods and Procedures Section of this project, this process is for benchmarking purposes only. These facilities are the National Naval Medical Center at Bethesda, Maryland, and Naval Medical Center, Portsmouth, Virginia. Along with Naval Medical Center San Diego,

the commanders of these facilities are responsible for each of the following regional commands: Navy Medicine National Capital Area (NMNC), Navy Medicine East (NME) and Navy Medicine West (NMW). These regional commands will be discussed next.

National Naval Medical Center

The National Naval Medical Center (NNMC) is one of the nation's largest and most renowned military medical centers, best known for its history of providing care to war heroes and presidents alike for the past 65 years. NNMC provides more than 12,500 ambulatory surgeries and almost 8,000 inpatient admissions each year. As the headquarters for the regional Health Care System, NNMC encompasses facilities in five states and the District of Columbia (Northern Virginia, Maryland, Pennsylvania, West Virginia and New Jersey). NNMC is also known as the "Presidents Hospital". NNMC provides care to the President and Vice-President of the United States, Members of Congress and Justices of the Supreme Court. In addition, when authorized, NNMC also provides care for foreign military and embassy personnel (NNMC website, 2007).

The regional Area of Responsibility (AOR) for Commander, Navy Medicine National Capital Area (NMNCA), includes Navy health care facilities within the national capital area. The NMNCA commander also serves as the National Naval Medical Center commander.

NNMC's immunization program falls under the Directorate of Public Health. Immunization services are offered to active duty personnel, drilling reservists, occupational health patients, pediatric, adolescents and non-active duty adult patients. Unlike NMCSD where various satellite areas within the main hospital (in addition to the branch clinics) provide immunization services, the delivery of immunization services at NNMC is provided in one central are in the main hospital called "Immunizations Clinic". Satellite immunization sections are located in each of the outlying branch clinics. Immunizations are given on a walk-in basis. NNMC's Immunization Program is facing similar challenges such as inadequate or scattered records, missing immunization documentations and the lack of process to ensure that patients are screened for immunizations at every outpatient visits.

Naval Medical Center Portsmouth Virginia

Naval Medical Center Portsmouth, Virginia (NMCP) is the oldest of all the medical facilities in the Navy. The facility occupies a 112-acre site along the Elizabeth River in downtown Portsmouth, Virginia. NMCP boasts a long history of dedicated service to all service-members and their families in the eastern seaboard. As with its two naval sister teaching hospitals in the Navy (NNMC and NMCSD), NMCP has an extensive Graduate Medical Education (GME) Program. The hospital conducts internships and

residency training in medicine, dentistry, psychology, and pastoral care. It offers residency programs in 13 specialty areas (NMCP website, 2007)

The regional AOR for Commander, Navy Medicine East (NME), includes Navy health care facilities located on the East Coast and Europe. The NME commander also serves as the Commander, Naval Medical Center, Portsmouth, Virginia.

NMCP's organizational structure is similar to that of NNMC and NMCSD. It is commanded by a two-star admiral. Twelve directorates are represented in the Executive Steering Committee, one of which is the Directorate of Public Health (DPH). The Immunization Product Line falls under DPH. Immunizations are provided on a walk-in basis in the immunization clinic in the main hospital. Satellite immunization clinics are located at all outlying clinics. NMCP's immunization program faces the same challenges as the other two medical centers.

Service Area Analysis Summary

While none of facilities mentioned above currently owns immunization processes that NMCSD can benchmark, it is still important to look into their current processes for the possibility of collaborating resources in order to improve the delivery of immunization services. As previously mentioned, these facilities represent the "Big Three" which means that any

process improvements coming down from them will benefit the other Navy medical facilities under their area of responsibility. Ultimately, all improvements will reach all beneficiaries seen in medical facilities around the world.

Internal Analysis

Internal analysis is the process of identifying organization's resources, competencies and capabilities in order to identify the strengths, weaknesses, opportunities and threats (Swayne, Duncan, & Ginter, 2006) that will influence the strategies identified to improve the delivery of immunization services at Naval Medical Center San Diego.

Naval Medical Center San Diego has a long and distinguished history in the San Diego area. Naval medical missions in this area began as early as 1914 when a field hospital was established in Balboa Park to support the Marine Corps. The first Navy medical facility in San Diego was established during World War I and in 1917 it was officially designated as United States Naval Hospital San Diego. Since then NMCSD has provided crucial medical care to our nation's war fighters during every major military campaign (NMCSD website, 2007).

NMCSD boasts an eligible beneficiary population of nearly 500,000 service members and dependents and a staff of approximately 6,000 military, civil service, and contract personnel. The hospital compound encompasses 79 acres and was

built with a bed capacity of 539. There are currently 265 active beds at the facility and average daily inpatient census is 200 patients. The medical center averages 3,698 outpatient visits a day and has a regional economic impact of $400 million. In addition to the main hospital campus, the hospital provides care at nine outpatient clinics throughout the San Diego area (NMCSD website, 2007).

In addition to providing health care to eligible beneficiaries, the medical center is a major teaching and research center. The hospital is active in graduate medical education programs in anesthesiology, dermatology, emergency medicine, general surgery, internal medicine, obstetrics-gynecology, ophthalmology, otolaryngology, orthopedics, pathology, pediatrics, psychiatry, psychology, radiology, urology, general practice dentistry, oral and maxillofacial surgery, nurse anesthesia, and hospital pharmacy. Additionally, the hospital offers fellowships in adolescent medicine, cardiology, critical care, computerized tomography and imaging, dermatology, gastroenterology, hematology-oncology, infectious disease, nephrology, and pulmonary disease. To accomplish this quality training the hospital has affiliations with many prestigious organizations throughout the U.S. These affiliations include the University of California San Diego, Children's Hospital and Health Center, Scripps Clinic and Research

Foundation, La Jolla. These relationships enable Navy medicine students to receive the best possible training in order to carry out the hospital's mission of supporting the war fighter, their families, retirees, and all other eligible beneficiaries (NMCSD website, 2007).

NMCSD Command Immunization Program

The Command Immunization Program (Appendix E) was established to promulgate policy and uniform immunization procedures under the auspices of Naval Medical Center San Diego. Providing immunizations for active duty and eligible beneficiaries is an integral part of wellness and prevention. The Command Immunization Program oversees the training program of immunization staff to ensure vaccines are administered safely. Providing the highest quality of care in the administration of immunizations requires planning to ensure the availability of equipment and vaccines with appropriately trained personnel and policies to provide prompt intervention in medical emergencies.

Department Heads, Clinical Division Officers, Clinical Nurse Managers and Senior Medical Officers are responsible for the overall functioning of immunization clinics located all over the hospital and each outlying clinics. Immunization clinics are responsible for patient care and vaccine security, and the daily functioning of their respected immunization sites. All NMCSD

health care providers have some responsibility to encourage patients to be current in their vaccinations. Oversight and coordination of the overall Command Immunization Program is the responsibility of Immunization Program Manager who is part of the Preventive Medicine Department under the Directorate of Public Health Services.

SWOT Analysis

SWOT Analysis is a strategic planning tool used to evaluate the *s*trengths, *w*eaknesses, *o*pportunities, and threats involved in a project or in a business venture. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to achieving that objective. If a SWOT analysis does not start with defining a desired end state or objective, it runs the risk of being useless. If a clear objective has been identified, the SWOT analysis tool can be used to help in the pursuit of that objective. The SWOT analysis in this project covers the following: (1) Strengths: attributes of NMCSD that can be helpful in achieving the objective, (2) Weaknesses: attributes of NMCSD that can be harmful to achieving the objective, (c) Opportunities: Conditions that can be helpful to achieving the objective, (d) Threats: Conditions that can be harmful to achieving the objective (Swayne, Duncan, & Ginter, 2006). The Opportunities and Threats will be discussed and

examined later in the directional strategy section of this project. Figure 2 lists the Strengths and Weaknesses that will be discussed next in detail.

Strengths	Weaknesses
• Strong Leadership • Well-funded program ($7M) • Well-defined vision • Well-trained immunization staff • Future electronic health record (AHLTA) • Automated and working process to vaccinate military personnel	• Multiple sites operating independently and inconsistently • Lack of single responsible entity • Lack of automation mechanism to record vaccination • Lack of standard operation procedure to ensure that vaccination status is checked during patient encounter

Figure 2: NMCSD Command Immunization Program SWOT Analysis

Identification. The value chain (Swayne, Duncan, & Ginter, 2006) was considered in the identification of the strengths and weaknesses listed in Figure 2. In the following paragraphs, a brief description of each strengths and weaknesses will be provided. In addition, each description will indicate where in the value chain the strengths and weaknesses fall under.

(a) Strengths. This section will review the four strengths listed in Figure 2.

(1) Strong Leadership. As with any organization, successes and failures depend largely on the vision of the people in-charge. NMCSD is fortunate to have very good leaders who recognize the need to identify areas to improve in order to provide better immunization services to all beneficiaries. (Value Chain, Support Activities, Strategic Resource)

(2) Well-funded program. By virtue of NMCSD's size as medical center, it is provided with a sunstantial funding because of its critical role in the fulfillment of the mission within Navy Medicine. Overall, immunization funding is approximately $7 million dollars. (Value Chain, Support Activities, Strategic Resource)

(3) Well-defined vision. As previously mentioned, NCMSD is incessant in its drive to improve the delivery of services for all beneficiaries. In the areas of immunization services, specific visions guide all process improvements to ensure that it is aligned with the hospital mission. These visions are discussed under directional strategies. (Value Chain, Support Activities, Strategic Resource)

(4) Well-trained immunization staff. NMCSD's immunization staff is well-trained and actively participates in monthly training provided by the Centers for Disease Control via

live webcast. In the webcast, all current immunization changes are discussed. In addition, a monthly training is also conducted by the Command Immunization Program to discuss specific issues identified by the Immunization Program Manager. (Value Chain, Support Activities, Strategic Resource)

(5) Future electronic medical record (AHLTA). As previously discussed, AHLTA is the way of the future for Military Medicine as far as automated health records are concerned. In this respect, AHLTA will play a vital role in the automation of immunization records. Automation will be the answer to scattered, inaccurate and missing immunization records which will then make it easier to screen immunization status during patient visits. (Value Chain, Support Activities, Strategic Resource)

(6) Automated and working process to vaccinate military personnel. SAMS automation system makes it easy to track immunization status of active duty personnel. The same process using automated systems will also make it easier to track immunization status of non-active duty beneficiaries. The current active duty process can be used as model. (Value Chain, Service Delivery, Point-Of-Service)

(b) Weaknesses. This section will review the four weaknesses listed in Figure 2.

(1) Multiple sites operating independently and inconsistently. Because sites that provide immunizations are located all over the facility, there is a tendency for each site to operate independently which has made it difficult for the immunization program manager to implement standardized procedures. (Value Chain, Support Activities, Organizational Structure)

(2) Lack of single responsible entity. The lack of a responsible entity is related to the first weakness. While the command immunization program manager has technical oversight, administrative oversight remains at the clinic level. This has caused conflicts as far as who should be responsible when it comes to instituting process changes. (Value Chain, Support Activities, Organizational Structure)

(3) Lack of automation mechanism to record vaccination. As previously mentioned, there is a lack of automation at NMCSD for immunization records which has resulted in scattered, inaccurate and missing records. This has made the job of evaluating immunization status very difficult for staff. (Value Chain, Service Delivery, Point-of-Service)

(4) Lack of standard operating procedure to ensure that vaccination status is checked during patient encounter. While there is a policy that governs immunization processes at NMCSD, there is a lack of a Standard Operating Procedure that

identifies the steps involve in checking immunization status during patient visits. (Value Chain, Support Activities, Strategic Resource)

Evaluation for Competitive Relevance.

(a) Strengths. The most important thing to remember with regards to strengths is to identify how the strengths can be converted as an asset to achieve the goal of providing better immunization services to all beneficiaries. All the strengths listed above are either strategic resources or service delivery related assets that will be useful to the strategies identified in ensuring that vaccination status are visible during patient encounters.

(b) Weaknesses. In the same manner as the strengths, the weaknesses enumerated above impact the strategies to be implemented. The key is to focus on the positive impact of each weakness as an opportunity for improvement rather than dwelling on the negative impact.

Focus

The strengths and weaknesses listed above provides a better understanding of where hospital leadership should focus the resources in order to take advantage of the strengths while ensuring that the impact of certain weaknesses are either minimized or eliminated. Weakness can be improved and converted

as strengths to help ensure quality immunization services are provided here at Naval Medical Center San Diego.

DIRECTIONAL STRATEGIES

Naval Medical Center San Diego is incessant in its pursuit of quality service to all patients, active duty or non-active duty. Contained in the mission, vision, guiding principles and strategic goals are clear and explicit directions strictly followed by all staff in the way they conduct business. The same directional strategy is what governs the leadership in what they believe the organization should be doing. The information provided below was obtained from the command intranet and command website.

Mission

NMCSD has the following three missions: (1) To deliver quality health services in support of the Armed Forces, (2) Maintain medical readiness, and (3) Advance military medicine through education, training and research.

Vision

NMCSD's vision is to be the leader in medical excellence and innovation, preferred by those we serve and dedicated to the operational forces.

Guiding Principles

NMCSD believe that staff is the most important resource; patients are the main focus and success is judged by the

customers. These values are important to NMCSD: (1) Service, professionalism, respect, teamwork, safety and compassion are valued. (2) Health is physical, mental, spiritual, and social well-being. (3) Readiness - Optimization - Integration is the foundation for force health protection. (4) Structured and disciplined resource decisions lead to sound business practices. (5) Collaboration and multi-disciplinary approaches will streamline processes. (6) Continuous improvement will lead to excellence

Strategic Goals

NMCSD focuses its strategic planning around five goals.

Goal 1 Readiness - Aligned and Agile: NMCSD will be ready to answer the call at all times. The organization will ensure that operational training is relevant, meeting the needs of the individual and the gaining command. Staff will be valued as the most important resource. NMCSD will create an accurate, equitable and predictable deployability plan for the command that is responsive to the needs of our personnel and our readiness mission. NMCSD will establish a deployability index that integrates physical fitness and readiness, and creates a culture of pride, ensuring that our personnel are ready to perform in the most challenging environment.

Goal 2- Quality, Economical Health Services: NMCSD is committed to practicing healthcare that produces superior

results for beneficiaries. The organization believes that through structured and disciplined resource decisions, they can produce sound business practices that will be the key to success. To achieve this goal, NMCSD must define patient population and capacity, develop a comprehensive population-based healthcare program, and use evidence-based practice where applicable. NMCSD will focus on patient and family-centered care that provides timely and cost-effective access to primary and specialty care, and maximize internal patient resources through a more structured medical management program. This goal demonstrates NMCSD's commitment to provide quality care while managing the organization through the use of performance targets and resource stewardship.

Goal 3 - One Navy Medicine - Active, Reserve and Civilian: NMCSD provides a world-class care to beneficiaries through an integrated team of military and civilian health professionals. NMCSD partners with Operational Forces medical assets to improve the quality of care for active duty personnel.

Goal 4 - Shaping Tomorrows Force: NMCSD is committed to shape the force in support of its mission. This means having the right person, in the right job, at the right time. The right mix of staff required will be determined to support our mission through development of staffing tools for each service area. NMCSD continues to believe that the staff is the most valuable

resource therefore a desirable workplace will be created that promotes morale, high retention and excellent growth opportunities. NMCSD will recruit the best healthcare providers and clinical practice for their beneficiary population through first-rate graduate medical education and research programs.

Goal 5 - Joint Medical Capabilities: NMCSD will integrate homeland security measures with civilian, military and government counterparts within our region. NMCSD will enhance working relationships with other agencies within the area to optimize health care delivery.

Command Immunization Program Vision

The vision for the immunization program focuses on the following five main areas: (1) Prevention of illness in all beneficiaries and maximum staff readiness to ensure that all staff has received the necessary vaccinations to be ready to meet mission requirements. (2) Immunization practices will be strategized so that the current status of immunization-related programs is aggressively verified, continuous improvement occurs, and accountability exists to the Executive Steering Council. This includes active tracking of vaccination rates and vaccine-preventable illnesses in addition to issues related to immunization business practices. (3) Immunization resource use will be predicted, tracked, and adjusted as needed and will be optimized for disease prevention at best value. Technology will

be used to manage vaccine purchasing and inventory, thereby freeing medical personnel to focus on delivery of medical care. (4) Technological advances will be sought and embraced to ensure that all individuals meet vaccination standards for their age and risk group. With every patient encounter, information technology will make vaccination status clear and enable our healthcare organization to provide needed vaccinations as part of a seamless care experience. (5) Immunization processes will be standardized throughout the command.

Assessment of Directional Strategies

The directional strategies mentioned in this section are more than adequate to guide the hospital leadership in identifying the most appropriate strategy to increase immunization status visibility during patient visits. As discussed in the previous sections, the Command Immunization Program Vision was crafted in order to guide any and all process changes involving the delivery of immunization services. Each area of the vision is very specific and explicitly addresses most of the issues that are the subject of discussion in this analysis, and specifically the issue of patient immunizations status visibility. It is worth noting that the second area of the vision for the Command Immunization Program specifically mentions the goal of strategizing to identify immunization related issues so that improvement occurs and responsibility

exists, which is undeniably related to the overall goal of this analysis.

Potential Strategies

The strategies to be implemented have to link the situational analysis to the plan (Swayne, Duncan and Ginter, 2006). Situational Analysis provides both the external and internal information that are important in formulating potential strategies. Much of the information gathered for this project reveals the need to re-examine the immunization processes that should be enhanced or reengineered to match NMCSD's resources and capabilities. In addition, the specific plans of actions have to support both the command and the immunization program mission and vision.

The SWOT Analysis confirmed the necessity of new strategies in order to improve the delivery of vaccinations to all beneficiaries. The main strengths enumerated in Figure 2 shows that good structures are in place such as good leadership, adequate funding, well-defined vision and well-trained staff. These structures will provide the basic foundation for strategies to be implemented in the form of process changes. Additionally, not only is there a future electronic health record, (AHLTA), NMCSD already possesses an automated and working process with which to vaccinate military personnel.

The strategic weaknesses consisted largely of working processes that need to be improved or completely overhauled given the current strategic conditions. The lack of a process to check immunization status during patient visits is by far the most critical. While there is a seamless process to ensure that active duty immunizations are up to date, no process is in place to do the same with other beneficiaries. This problem is further exacerbated by the old practice of using multiple forms to record immunizations. More often than not, vaccination documentations are scattered or missing, making it difficult to verify immunizations received.

From an organizational perspective, there is no question that NMCSD is providing the best possible care given the current operational tempo. The hospital leadership fully understands its role in the war on global terrorism, and as such, designed its strategic objectives in order to meet operational requirements while maintaining quality services provided to all beneficiaries.

From a divisional perspective, the command immunization program has to be revitalized. As the situational analysis suggested and the directional strategies confirmed, there is a need to improve in order to continue the excellence in healthcare that NMCSD promised to the customers. In other words,

the adaptive strategy that NMCSD should pursue has to focus on enhancing current immunization processes.

Adaptive Strategies

Adaptive strategies are those that provide the organization the opportunity to expand, maintain or contract the scope of the services provided (Swayne, Gunter & Duncan, 2006). The alternatives provide the major strategic choice for any organization that will serve as the catalyst for market and competitive strategies selected. The tool used to identify the appropriate adaptive strategy (or strategies) is the Product Life Cycle (PLC). PLC is useful in selecting alternative based on the premise that all products or services go through distinct stages (Swayne, Gunter & Duncan, 2006).

NMCSD's immunization program is considered to be in the mature stage as shown in Figure 3. Immunization services have been delivered in the facility since inception and therefore are extremely mature. The program continues to compete with private sector services. In addition, the program is well-funded as noted in previous sections. Further, it is considered to be in the middle portion of maturity stage and still a worthy and valuable process.

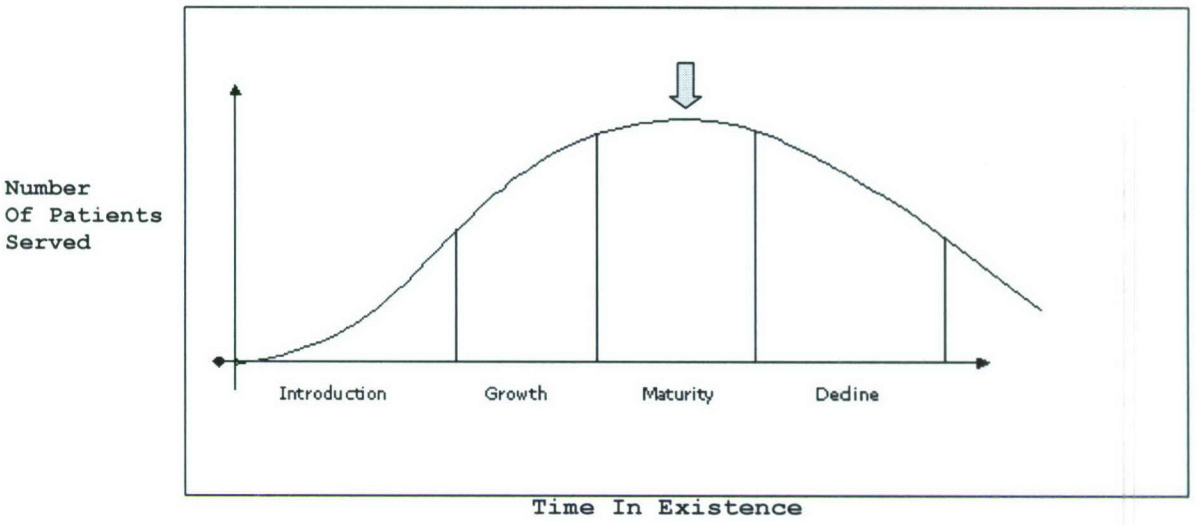

Figure 3. PLC Analysis of NMCSD Immunization Program

The mature stage offers at least two potential adaptive strategies that NMCSD can pursue to improve its immunization program. These will be discussed next.

NMCSD could pursue an enhancement strategy that focuses on quality. The rationale behind this alternative is that while the immunization program has operational inefficiencies, it has satisfactorily delivered immunization services without necessarily sacrificing quality. The goal is to improve quality by reengineering internal immunization processes. Capitalizing on the strong leadership within NMCSD and its immunization program, NMCSD could work to improve current immunization processes. One option under this scenario would be to capitalize on one of its major strengths, an automated and working process to vaccinate military personnel, and begin

tracking vaccinations for all beneficiaries in SAMS. Later, when AHLTA is up and running at NMCSD, the information recorded in SAMS could be transferred to the electronic medical record for all patients. This would allow the immunization program to remain decentralized and work essentially the way it currently operates.

NMCSD could also pursue a status quo strategy. Virtually no processes would change and documentation of vaccination would occur as it is now. AHLTA would be incorporated into the process for each clinic as it matures throughout NMCSD and patient vaccination would only be as accurate as each clinic adopts AHLTA.

Market Entry Strategies

Market entry strategies involved decisions on how the organization enters the market. It is also important to understand that they are "…not ends in themselves but rather supports the adaptive strategies selected…" (Swayne, Duncan & Ginter, 2006: 249.) Swayne and colleagues (2006) identify eight possible market entry strategies that organizations can pursue. Using external market conditions as the basis of analysis, NMCSD may choose to pursue alliance strategy. The challenges faced by the NMCSD Command Immunization Program are the same as the other two medical centers, NNMC and NMCP. As suggested by Swayne, Duncan, and Ginter (2006), all three possesses complementary

resources, competencies and skills. Immunization services that are delivered in these facilities are also in the mature stage of the PLC. Most importantly, the commanders of these facilities have oversight over medical facilities within their area of responsibility (AOR). This can facilitate the introduction of process improvements, including immunization processes, from the "Big Three" down to the Echelon IV medical facilities (facilities under NMCSD, NNMC and NMCP as defined by AOR). The impact will be far-reaching because it will reach all beneficiaries all over the world.

From an internal basis of analysis, NMCSD can also pursue an internal development strategy. This would allow the organization to capitalize on existing structure, personnel and capital to improve its immunization program. NMCSD has a strong and functional organization and the technical capacity (SAMS) to pursue such a strategy. It also already has the operational capacity to do so because its personnel already use SAMS to document vaccinations for military personnel.

Competitive strategies

Competitive strategies consist of strategic posturing and positioning. Strategic posturing involves the organizations behavior within their market segment. Strategic positioning concerns how the organization positions their products or services to the entire market (Swayne, Duncan, & Ginter, 2006).

Focusing on the internal competencies and capabilities that NMCDS possesses, the most appropriate posture strategies are prospector and analyzer. Swayne, Duncan, and Ginter (2006) describe a prospector as having the following characteristics: (a) the ability to adjust organization to a variety of external forces, (b) technological and administrative flexibility, and (c) the ability to deploy and coordinate resources among numerous decentralized units. These describe the internal conditions that NMCSD possesses.

Alternatively, analyzers exhibit the following traits: (a) the ability to mix high levels of standardization and routinization of core products and markets with flexibility and adaptation for new products, (b) the structure to accommodate both stable and dynamic areas of operation, (c) effective lateral and vertical communication channels, and (d) effective strategy and planning teams (Swayne, Duncan, & Ginter, 2006). This posture would highlight many of the major strengths that NMCSD possesses. As previously mentioned, the NMCSD Command Immunization Program is unique as the delivery of vaccinations are decentralized yet the management has been able to deploy, coordinate and maintain control over resources as well as policy changes. NMCSD, as an organization, has quickly adapted to the changing external environment. This was evident as it continued

to provide quality care at critically low staffing level because of personnel deployment.

Potential Strategy Maps

Using the information above, two potential strategy maps (Figure 4) can be drawn for NMCSD to follow. Strategy maps provide a broad overview of the organization's direction and a basis of effective implementation to carry out the overall strategy (Swayne, Duncan & Ginter, 2006).

Strategy Map #1 consists of enhancement, alliance and prospector. Enhancement will involve improving current processes or instituting a non-existing process that will ensure that immunization status is visible during patient visits. Alliance with the other medical centers will be beneficial as it will pool all the resources to make sure that a robust strategy is in place for the "Big Three" to implement, at the same time ensuring standardization of processes among the three facilities. It is important to adopt a prospector strategy in order to better respond to a rapidly changing environment.

Strategy Map #2 consists of status quo, internal development and analyzer. Status quo will mean retention of existing processes with no changes involved. Internal development will allow NMCSD to take advantage of its existing resources. An analyzer posture will enable the facility to highlight its strengths and make use of them as appropriate.

Strategy Map

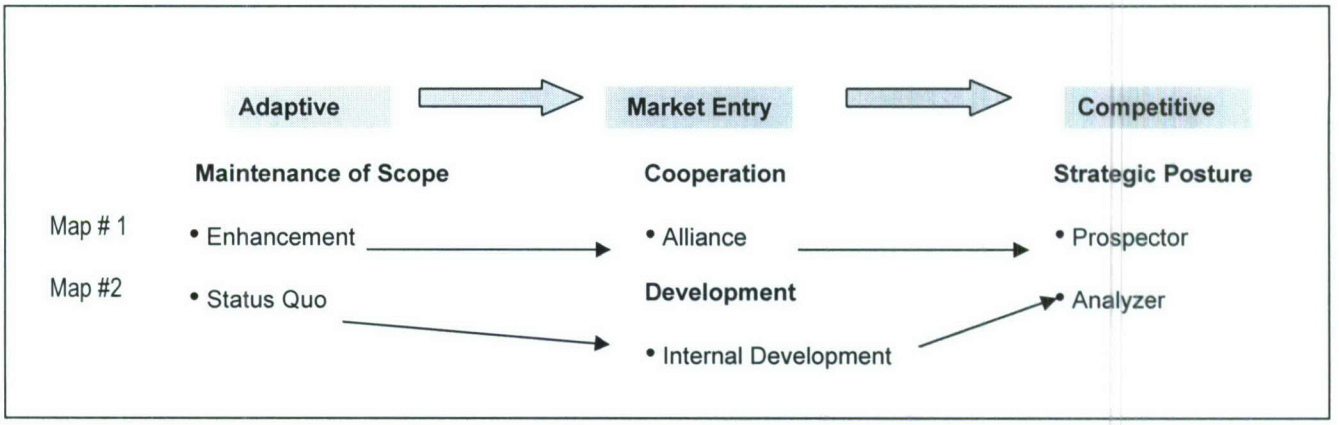

Figure 4. Strategic Map to Increase Visibility of Patient Immunization Status During Patient Visits

Evaluation of Strategies

As noted previously, this project has not yet considered the opportunities and threats facing NMCSD. These will be used in this section to further evaluate the two strategy maps described above. Opportunities facing NMCSD will be described first followed by potential threats. Then each strategy map will be evaluated against these opportunities and threats.

Opportunities

NMCSD is now presented with an opportunity to institute a new immunization process that is new to Navy Medicine. This opportunity will allow this organization to not only improve the services provided here at the hospital but also improve the immunization services provided at every Navy medical facility in the world. The lack of process to make immunization status visible is a problem Navy wide. NMCSD will become the pioneer in

enhancing the process to make sure that immunization status is checked when a patient is seen in all Navy medical facilities.

Threats

The biggest threat to NMCSD is failing to get the buy-in from the staff members. The success of the process or strategy depends largely on how well it is received by the process owners or the staff members. The implementation of new processes or strategies should involve forming a multi-disciplinary team composed of corpsmen, nurses and provider in order to get them involved in the decision-making process. This will increase the chance of less resistance from staff members.

Strategy Map #1

Strategy Map 1 is the most ideal in order to take advantage of the opportunities the NMCSD faces while minimizing the negative impact of the threats. The applicability of Strategy Map 1 can be extended to other facilities Navy wide, especially those under Navy Medicine West. As previously discussed, all strategies involving NMCSD affects the other facilities under the NAVMEDWEST area of responsibility.

Strategy Map #2

As with Strategy Map 1, the applicability of Strategy Map 2 can be extended to the other Navy medical facilities. The only drawback for Strategy Map 2 is that the adaptive strategy selected is status quo, which means that no changes will be

implemented. The problem of visibility can only be fully fixed by instituting a new process which involves the use of AHLTA rather than maintaining the existing processes which have proven to be ineffective.

Selection and Explanation of Strategy Map

Strategy Map # 1 is highly recommended because it involves an adaptive strategy that will involve new changes to the current system in order improve or institute a non-existing process as a solution to increase visibility of patient immunization status. This new process will use AHLTA as the primary resource of immunization documentation.

Strategy Map 1 illustrates the strategy that NMCSD can implement in order to increase visibility of immunization status during outpatient visits. As mentioned in the beginning of this project, NMCSD is currently using SAMS and the traditional paper records to track vaccinations of active duty personnel. However, the process is not extended to other beneficiaries. The result is a mixture of problems in missing opportunities to vaccinate, missing or inappropriate documentation or no documentation at all. Further, because there was a lack of clear policy governing this specific process, it became difficult for NMCSD to track immunization rates that can be used as a metric for effectiveness.

The solution of immunization visibility can be solved simply by instituting or integrating a step into the current patient check-in process to make sure that staff members screens both paper records (on the interim) and AHLTA to verify if patient requires immunization. This process enhancement will only work if proper and accurate documentation is reflected in the patient's health record and in AHLTA. AHLTA will become the only source in the event that NMCSD will stop the use of paper records.

An alliance between all medical centers might provide this initiative with more steam. Since NMCSD, NNMC and NMCP face the same problems, the three should form an alliance through focus group (representative from each facility) in order to discuss the best way to implement the strategy successfully.

As an organization, NMCSD must be responsive to changes in the external environment especially with updates in immunizations and immunization management. The Immunization Program manager should be proactive in educating his/herself with the latest and greatest in immunizations. The CDC Website is a good resource for information and the military vaccine agency (MILVAX) frequently sends new updates to all military medical facilities.

A more detailed explanation on how all of these strategies should be implemented will be articulated under Action Plan. Specific steps will be provided in order to ensure successful implementation and maximum buy-in from hospital personnel.

SERVICE DELIVERY STRATEGIES

As discussed under Methods and Procedures, the value chain will be used in order address processes that will add more value to all stakeholders. The success of implementation is more likely if value-added strategies are planned. Value adding service delivery strategies include pre-service, point-of-service and after-service strategies (Swayne, Duncan & Ginter, 2006).

Pre-Service

Under the adaptive strategy selected (as shown in the strategy map), a new process that is not known to the customers will be instituted. The new immunization process will involve checking the vaccination status of patients. Because this process is new, it is important that patients are informed. The pre-service stage of the value chain involves ensuring that patients are aware that certain services are available for them.

Marketing and promotion is the best way to inform patients. Marketing and promoting the new immunization process will not entail complicated planning. NMCSD has all the resources to market and promote the new process of checking immunization

status during every patient visit without necessarily incurring additional cost. This new immunization process can be advertised through the main appointment switchboard in the form of a telephone message or reminder to patients. It can also be done via the hospital newsletter, website, leaflets in hospital waiting areas and poster announcements. Patients will be advised to bring all immunization records such as yellow shot cards and civilian records so that hospital personnel can obtain accurate immunization history that reflects a true vaccination status. This will also allow the staff members to transcribe all records found in paper documentations as provided by the patients into AHLTA which will ultimately become the primary source of immunization documentation.

Point-of-Service

The point-of service delivery is oriented around patient care delivery. This is the point where clinical personnel deliver the care to the patients. Quality and customer service is paramount at this stage of the value-added chain. The new process of checking immunization status during patient visits (point-of-service process) will provide the quality that has been the goal of the immunization program. Because this process involves direct interaction with patients, it is important that excellent customer service is provided while interacting with the patients.

After-Service

After a strategy is implemented, a follow-up should be done to inquire if the patients were satisfied with the services received. As a prospector, it is important to respond to customer feedbacks as a vehicle of process change. It is also important as a prospector to perform audits of the effectiveness of the current process and respond accordingly. A customer survey can be used for this purpose. Another critical after-step is gathering data to determine if immunization rates are increasing or decreasing. This will enable leadership to measure if the process change did in fact add value not only to the patients, but to the organization and to the staff members.

SUPPORT DELIVERY STRATEGIES

It is important to the successful implementation of any strategy to ensure that value adding support strategies are logical. This includes culture, structure and resources. Structures such as technology are available to include AHLTA and other existing office systems. Resources such as staffing can be a problem but are unlikely to become a problem considering that the immunization program is well-funded. Since the strategy deals with public health, it will not be difficult to request additional staffing if the need occurs as the hospital leadership has been very responsive to public health needs.

The most critical of the support delivery strategies is the organizational culture. As previously mentioned, obtaining buy-in from the staff is of utmost importance. The leadership has to emphasize the importance of the strategy. It becomes easy for personnel to accept a change if they understand that it is important to mission accomplishment. Leaders should convey that the staff is here for the patients and that patient welfare is the most important issue. Hospital leadership should focus on building an organizational culture that prioritizes patients need before anything else. NMCSD has prided itself as one of the best hospitals in the world; therefore, building such organizational culture should not be difficult.

ACTION PLAN

For any strategy to be successful, it is imperative that the leadership ensures that the strategy is communicated up and down the chain. Communicating the strategy will allow the employees who are not involved with the planning to understand the underlying issues and assumptions used in strategy development. It is important that all employees understand their role and make it their job to ensure that the enhancement strategy is implemented and integrated into their daily jobs.

As previously mentioned, the solution to the problem of raising immunization status visibility is enhancing the process. Based on all factors considered, integrating an immunizations

status check using AHLTA during every patient encounters is the best possible solution as it will ensure that opportunities to vaccinate are not missed.

In order to effectively institute this new process, actionable objectives should be established to serve as specific implementation plan. For the purposes of this project, the implementation or action plan will include three areas. These areas are assessment, action and feedback.

In terms of assessment, NMCSD should quantify the problem by pooling data in order to establish the severity of missed opportunities to vaccinate. Each clinic should be responsible to gather this data by using various tools such as AHLTA, hard copy records and yellow shot cards. Possession of this data will help the Immunization Program Manager to convince the Executive Steering Committee to agree on the proposal to institute a process to check immunization status during patient visits. NMCSD should also evaluate medical records to determine the immunization rate for a defined group (seniors, for example) to establish a pilot group on which to test the proposed process. These two steps are essential because the hospital leadership, while supportive of the immunization program, does not have an accurate perception of the hospital's true immunization rate.

In terms of action, NMCSD should form a multi-disciplinary team of providers, nurses, corpsmen and immunization staff to

serve as the champion for the process or strategy. Each clinic should be represented. Representatives will serve as the implementation point of contact. NMCSD should also form a team of junior corpsmen to perform data entry of old immunization data into AHLTA as was done at the TRICARE Outpatient Clinic Chula Vista (Appendix F). This will be a critical step because AHLTA will ultimately be used as the primary screening tool to check patient immunization status. NMCSD's executive committee should also meet with each clinic's leadership to determine how and when the new process can be implemented in their clinics as part of the normal patient check-in process. Integration of this new process will not be complicated as it will only involve front desk and vital signs staff.

Feedback will be incorporated throughout the process. Using a set metric, NMCSD should perform weekly or monthly audits of each clinic's performance after process implementation. They should also meet with clinic leadership to discuss results of the audit to determine new steps to be taken.

CONCLUSION

This analysis is a critical first step to automating immunization records for all patients. This will provide accurate reporting and tracking of immunization data. The problem of determining immunization status will be resolved through the use of AHLTA as the primary source of data. Given

all the internal and external influences that affect the delivery of immunization services at NMCSD, there is no question that the selected strategies of enhancement, alliance and prospector is the most ideal and has the best chance of success. In addition, NMCSD possesses the leadership, resources, skills and competencies needed to ensure the successful implementation of the recommended strategies to make immunization status visible during patient encounters.

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Appendix A

Childhood and Adolescent Immunization Schedule

DEPARTMENT OF HEALTH AND HUMAN SERVICES • CENTERS FOR DISEASE CONTROL AND PREVENTION

Recommended Immunization Schedule for Persons Aged 0–6 Years—UNITED STATES • 2007

Vaccine ▼ Age ▶	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B[1]	HepB	HepB		See footnote 1	HepB				HepB Series		
Rotavirus[2]			Rota	Rota	Rota						
Diphtheria, Tetanus, Pertussis[3]			DTaP	DTaP	DTaP		DTaP				DTaP
Haemophilus influenzae type b[4]			Hib	Hib	Hib[4]	Hib			Hib		
Pneumococcal[5]			PCV	PCV	PCV	PCV				PCV PPV	
Inactivated Poliovirus			IPV	IPV	IPV						IPV
Influenza[6]					Influenza (Yearly)						
Measles, Mumps, Rubella[7]						MMR					MMR
Varicella[8]						Varicella					Varicella
Hepatitis A[9]						HepA (2 doses)				HepA Series	
Meningococcal[10]										MPSV4	

Range of recommended ages

Catch-up immunization

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 0–6 years. Additional information is available at http://www.cdc.gov/nip/recs/child-schedule.htm. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

1. Hepatitis B vaccine (HepB). *(Minimum age: birth)*

At birth:

- Administer monovalent HepB to all newborns before hospital discharge.
- If mother is hepatitis surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine the HBsAg status as soon as possible and if HBsAg-positive, administer HBIG (no later than age 1 week).
- If mother is HBsAg-negative, the birth dose can only be delayed with physician's order and mother's negative HBsAg laboratory report documented in the infant's medical record.

After the birth dose:

- The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age ≥1–2 months. The final dose should be administered at age ≥24 weeks. Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg after completion of ≥3 doses of a licensed HepB series, at age 9–18 months (generally at the next well-child visit).

4-month dose:

- It is permissible to administer 4 doses of HepB when combination vaccines are administered after the birth dose. If monovalent HepB is used for doses after the birth dose, a dose at age 4 months is not needed.

2. Rotavirus vaccine (Rota). *(Minimum age: 6 weeks)*

- Administer the first dose at age 6–12 weeks. Do not start the series later than age 12 weeks.
- Administer the final dose in the series by age 32 weeks. Do not administer a dose later than age 32 weeks.
- Data on safety and efficacy outside of these age ranges are insufficient.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). *(Minimum age: 6 weeks)*

- The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose.
- Administer the final dose in the series at age 4–6 years.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). *(Minimum age: 6 weeks)*

- If PRP-OMP (PedvaxHIB® or ComVax® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required.
- TriHiBit® (DTaP/Hib) combination products should not be used for primary immunization but can be used as boosters following any Hib vaccine in children aged ≥12 months.

5. Pneumococcal vaccine. *(Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPV])*

- Administer PCV at ages 24–59 months in certain high-risk groups. Administer PPV to children aged ≥2 years in certain high-risk groups. See *MMWR* 2000;49(No. RR-9):1–35.

6. Influenza vaccine. *(Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 5 years for live, attenuated influenza vaccine [LAIV])*

- All children aged 6–59 months and close contacts of all children aged 0–59 months are recommended to receive influenza vaccine.
- Influenza vaccine is recommended annually for children aged ≥59 months with certain risk factors, health-care workers, and other persons (including household members) in close contact with persons in groups at high risk. See *MMWR* 2006;55(No. RR-10):1–41.
- For healthy persons aged 5–49 years, LAIV may be used as an alternative to TIV.
- Children receiving TIV should receive 0.25 mL if aged 6–35 months or 0.5 mL if aged ≥3 years.
- Children aged <9 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by ≥4 weeks for TIV and ≥6 weeks for LAIV).

7. Measles, mumps, and rubella vaccine (MMR). *(Minimum age: 12 months)*

- Administer the second dose of MMR at age 4–6 years. MMR may be administered before age 4–6 years, provided ≥4 weeks have elapsed since the first dose and both doses are administered at age ≥12 months.

8. Varicella vaccine. *(Minimum age: 12 months)*

- Administer the second dose of varicella vaccine at age 4–6 years. Varicella vaccine may be administered before age 4–6 years, provided that ≥3 months have elapsed since the first dose and both doses are administered at age ≥12 months. If second dose was administered ≥28 days following the first dose, the second dose does not need to be repeated.

9. Hepatitis A vaccine (HepA). *(Minimum age: 12 months)*

- HepA is recommended for all children aged 1 year (i.e., aged 12–23 months). The 2 doses in the series should be administered at least 6 months apart.
- Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
- HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children. See *MMWR* 2006;55(No. RR-7):1–23.

10. Meningococcal polysaccharide vaccine (MPSV4). *(Minimum age: 2 years)*

- Administer MPSV4 to children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups. See *MMWR* 2005;54(No. RR-7):1–21.

The Recommended Immunization Schedules for Persons Aged 0–18 Years are approved by the Advisory Committee on Immunization Practices (http://www.cdc.gov/nip/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

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Recommended Immunization Schedule for Persons Aged 7–18 Years—UNITED STATES • 2007

Vaccine ▼ / Age ▶	7–10 years	11–12 YEARS	13–14 years	15 years	16–18 years
Tetanus, Diphtheria, Pertussis[1]	see footnote 1	Tdap	Tdap		
Human Papillomavirus[2]	see footnote 2	HPV (3 doses)	HPV Series		
Meningococcal[3]	MPSV4	MCV4	MCV4[3] MCV4		
Pneumococcal[4]	PPV				
Influenza[5]	Influenza (Yearly)				
Hepatitis A[6]	HepA Series				
Hepatitis B[7]	HepB Series				
Inactivated Poliovirus[8]	IPV Series				
Measles, Mumps, Rubella[9]	MMR Series				
Varicella[10]	Varicella Series				

Range of recommended ages

Catch-up immunization

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 7–18 years. Additional information is available at http://www.cdc.gov/nip/recs/child-schedule.htm. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).
(Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL™)
- Administer at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoids vaccine (Td) booster dose.
- Adolescents aged 13–18 years who missed the 11–12 year Td/Tdap booster dose should also receive a single dose of Tdap if they have completed the recommended childhood DTP/DTaP vaccination series.

2. Human papillomavirus vaccine (HPV). *(Minimum age: 9 years)*
- Administer the first dose of the HPV vaccine series to females at age 11–12 years.
- Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose.
- Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

3. Meningococcal vaccine. *(Minimum age: 11 years for meningococcal conjugate vaccine [MCV4]; 2 years for meningococcal polysaccharide vaccine [MPSV4])*
- Administer MCV4 at age 11–12 years and to previously unvaccinated adolescents at high school entry (at approximately age 15 years).
- Administer MCV4 to previously unvaccinated college freshmen living in dormitories; MPSV4 is an acceptable alternative.
- Vaccination against invasive meningococcal disease is recommended for children and adolescents aged ≥2 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups. See *MMWR* 2005;54(No. RR-7):1–21. Use MPSV4 for children aged 2–10 years and MCV4 or MPSV4 for older children.

4. Pneumococcal polysaccharide vaccine (PPV). *(Minimum age: 2 years)*
- Administer for certain high-risk groups. See *MMWR* 1997;46(No. RR-8):1–24, and *MMWR* 2000;49(No. RR-9):1–35.

5. Influenza vaccine. *(Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 5 years for live, attenuated influenza vaccine [LAIV])*
- Influenza vaccine is recommended annually for persons with certain risk factors, health-care workers, and other persons (including household members) in close contact with persons in groups at high risk. See *MMWR* 2006;55 (No. RR-10):1–41.
- For healthy persons aged 5–49 years, LAIV may be used as an alternative to TIV.
- Children aged <9 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by ≥4 weeks for TIV and ≥6 weeks for LAIV).

6. Hepatitis A vaccine (HepA). *(Minimum age: 12 months)*
- The 2 doses in the series should be administered at least 6 months apart.
- HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children. See *MMWR* 2006;55 (No. RR-7):1–23.

7. Hepatitis B vaccine (HepB). *(Minimum age: birth)*
- Administer the 3-dose series to those who were not previously vaccinated.
- A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.

8. Inactivated poliovirus vaccine (IPV). *(Minimum age: 6 weeks)*
- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age ≥4 years.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

9. Measles, mumps, and rubella vaccine (MMR). *(Minimum age: 12 months)*
- If not previously vaccinated, administer 2 doses of MMR during any visit, with ≥4 weeks between the doses.

10. Varicella vaccine. *(Minimum age: 12 months)*
- Administer 2 doses of varicella vaccine to persons without evidence of immunity.
- Administer 2 doses of varicella vaccine to persons aged <13 years at least 3 months apart. Do not repeat the second dose, if administered ≥28 days after the first dose.
- Administer 2 doses of varicella vaccine to persons aged ≥13 years at least 4 weeks apart.

The Recommended Immunization Schedules for Persons Aged 0–18 Years are approved by the Advisory Committee on Immunization Practices (http://www.cdc.gov/nip/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

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Catch-up Immunization Schedule

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for Persons Aged 4 Months–18 Years Who Start Late or Who Are More Than 1 Month Behind

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

CATCH-UP SCHEDULE FOR PERSONS AGED 4 MONTHS–6 YEARS					
Vaccine	**Minimum Age for Dose 1**	**Minimum Interval Between Doses**			
		Dose 1 to Dose 2	**Dose 2 to Dose 3**	**Dose 3 to Dose 4**	**Dose 4 to Dose 5**
Hepatitis B[1]	Birth	4 weeks	8 weeks (and 16 weeks after first dose)		
Rotavirus[2]	6 wks	4 weeks	4 weeks		
Diphtheria, Tetanus, Pertussis[3]	6 wks	4 weeks	4 weeks	6 months	6 months[3]
Haemophilus influenzae type b[4]	6 wks	4 weeks If first dose administered at age <12 months 8 weeks (as final dose) If first dose administered at age 12–14 months No further doses needed If first dose administered at age ≥15 months	4 weeks[4] If current age <12 months 8 weeks (as final dose)[4] If current age ≥12 months and second dose administered at age <15 months No further doses needed If previous dose administered at age ≥15 months	8 weeks (as final dose) This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	
Pneumococcal[5]	6 wks	4 weeks If first dose administered at age <12 months and current age <24 months 8 weeks (as final dose) If first dose administered at age ≥12 months or current age 24–59 months No further doses needed for healthy children if first dose administered at age ≥ 24 months	4 weeks If current age <12 months 8 weeks (as final dose) If current age ≥12 months No further doses needed for healthy children if previous dose administered at age ≥24 months	8 weeks (as final dose) This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	3 months			
Hepatitis A[9]	12 mos	6 months			
CATCH-UP SCHEDULE FOR PERSONS AGED 7–18 YEARS					
Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis[10]	7 yrs*	4 weeks	8 weeks If first dose administered at age <12 months 6 months If first dose administered at age ≥12 months	6 months If first dose administered at age < 12 months	
Human Papillomavirus[11]	9 yrs	4 weeks	12 weeks		
Hepatitis A[9]	12 mos	6 months			
Hepatitis B[1]	Birth	4 weeks	8 weeks (and 16 weeks after first dose)		
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	4 weeks If first dose administered at age ≥13 years 3 months If first dose administered at age < 13 years			

1. Hepatitis B vaccine (HepB). *(Minimum age: birth)*
- Administer the 3-dose series to those who were not previously vaccinated.
- A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.

2. Rotavirus vaccine (Rota). *(Minimum age: 6 weeks)*
- Do not start the series later than age 12 weeks.
- Administer the final dose in the series by age 32 weeks. Do not administer a dose later than age 32 weeks.
- Data on safety and efficacy outside of these age ranges are insufficient.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). *(Minimum age: 6 weeks)*
- The fifth dose is not necessary if the fourth dose was administered at age ≥4 years.
- DTaP is not indicated for persons aged ≥7 years.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). *(Minimum age: 6 weeks)*
- Vaccine is not generally recommended for children aged ≥5 years.
- If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB® or ComVax® [Merck]), the third (and final) dose should be administered at age 12–15 months and at least 8 weeks after the second dose.
- If first dose was administered at age 7–11 months, administer 2 doses separated by 4 weeks plus a booster at age 12–15 months.

5. Pneumococcal conjugate vaccine (PCV). *(Minimum age: 6 weeks)*
- Vaccine is not generally recommended for children aged ≥5 years.

6. Inactivated poliovirus vaccine (IPV). *(Minimum age: 6 weeks)*
- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was administered at age ≥4 years.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

7. Measles, mumps, and rubella vaccine (MMR). *(Minimum age: 12 months)*
- The second dose of MMR is recommended routinely at age 4–6 years but may be administered earlier if desired.
- If not previously vaccinated, administer 2 doses of MMR during any visit with ≥4 weeks between the doses.

8. Varicella vaccine. *(Minimum age: 12 months)*
- The second dose of varicella vaccine is recommended routinely at age 4–6 years but may be administered earlier if desired.
- Do not repeat the second dose in persons aged <13 years if administered ≥28 days after the first dose.

9. Hepatitis A vaccine (HepA). *(Minimum age: 12 months)*
- HepA is recommended for certain groups of children, including in areas where vaccination programs target older children. See *MMWR* 2006;55(No. RR-7):1–23.

10. Tetanus and diphtheria toxoids vaccine (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap). *(Minimum ages: 7 years for Td, 10 years for BOOSTRIX®, and 11 years for ADACEL™)*
- Tdap should be substituted for a single dose of Td in the primary catch-up series or as a booster if age appropriate; use Td for other doses.
- A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose. A booster (fourth) dose is needed if any of the previous doses were administered at age <12 months. Refer to ACIP recommendations for further information. See *MMWR* 2006;55(No. RR-3).

11. Human papillomavirus vaccine (HPV). *(Minimum age: 9 years)*
- Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

Information about reporting reactions after immunization is available online at http://www.vaers.hhs.gov or by telephone via the 24-hour national toll-free information line 800-822-7967. Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for immunization, is available from the National Center for Immunization and Respiratory Diseases at http://www.cdc.gov/nip/default.htm or telephone, 800-CDC-INFO (800-232-4636).

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Source: CDC Website

Appendix B

Adult Immunization Schedule

Recommended Adult Immunization Schedule United States, October 2006–September 2007

Recommended adult immunization schedule, by vaccine and age group

Age group (yrs) ▶ / Vaccine ▼	19–49 years	50–64 years	≥65 years
Tetanus, diphtheria, pertussis (Td/Tdap)[1*]	1-dose Td booster every 10 yrs; Substitute 1 dose of Tdap for Td		
Human papillomavirus (HPV)[2*]	3 doses (females)		
Measles, mumps, rubella (MMR)[3*]	1 or 2 doses	1 dose	
Varicella[4*]	2 doses (0, 4–8 wks)	2 doses (0, 4–8 wks)	
Influenza[5*]	1 dose annually	1 dose annually	
Pneumococcal (polysaccharide)[6,7]	1–2 doses		1 dose
Hepatitis A[8*]	2 doses (0, 6–12 mos, or 0, 6–18 mos)		
Hepatitis B[9*]	3 doses (0, 1–2, 4–6 mos)		
Meningococcal[10]	1 or more doses		

Recommended adult immunization schedule, by vaccine and medical and other indications

Indication ▶ / Vaccine ▼	Pregnancy	Congenital immunodeficiency; leukemia;[11] lymphoma; generalized malignancy; cerebrospinal fluid leaks; therapy with alkylating agents, antimetabolites, radiation, or high-dose, long-term corticosteroids	Diabetes, heart disease, chronic pulmonary disease, chronic alcoholism	Asplenia[11] (including elective splenectomy and terminal complement component deficiencies)	Chronic liver disease, recipients of clotting factor concentrates	Kidney failure, end-stage renal disease, recipients of hemodialysis	Human immunodeficiency virus (HIV) infection[2,11]	Health-care workers
Tetanus, diphtheria, pertussis (Td/Tdap)[1*]	1-dose Td booster every 10 yrs; Substitute 1 dose of Tdap for Td							
Human papillomavirus (HPV)[2*]	3 doses for women through age 26 years (0, 2, 6 mos)							
Measles, mumps, rubella (MMR)[3*]	■	1or 2 doses						
Varicella[4*]	■	2 doses (0, 4–8 wks)					■	2 doses
Influenza[5*]	1 dose annually			1 dose annually	1 dose annually			
Pneumococcal (polysaccharide)[6,7]	1–2 doses	1–2 doses						1–2 doses
Hepatitis A[8*]	2 doses (0, 6–12 mos, or 0, 6–18 mos)				2 doses (0, 6–12 mos, or 0, 6–18 mos)			
Hepatitis B[9*]	3 doses (0, 1–2, 4–6 mos)				3 doses (0, 1–2, 4–6 mos)			
Meningococcal[10]	1 dose			1 dose	1 dose			

* Covered by the Vaccine Injury Compensation Program

These recommendations must be read along with the footnotes, which can be found on the next 2 pages of this schedule.

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

Contraindicated

Footnotes

1. Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination. Adults with uncertain histories of a complete primary vaccination series with diphtheria and tetanus toxoid–containing vaccines should begin or complete a primary vaccination series. A primary series for adults is 3 doses; administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second. Administer a booster dose to adults who have completed a primary series and if the last vaccination was received ≥ 10 years previously. Tdap or tetanus and diphtheria (Td) vaccine may be used; Tdap should replace a single dose of Td for adults aged <65 years who have not previously received a dose of Tdap (either in the primary series, as a booster, or for wound management). Only one of two Tdap products (Adacel® [sanofi pasteur, Swiftwater, Pennsylvania]) is licensed for use in adults. If the person is pregnant and received the last Td vaccination ≥10 years previously, administer Td during the second or third trimester; if the person received the last Td vaccination in <10 years, administer Tdap during the immediate postpartum period. A one-time administration of 1-dose of Tdap with an interval as short as 2 years from a previous Td vaccination is recommended for postpartum women, close contacts of infants aged <12 months, and all health-care workers with direct patient contact. In certain situations, Td can be deferred during pregnancy and Tdap substituted in the immediate postpartum period, or Tdap can be given instead of Td to a pregnant woman after an informed discussion with the woman (see http://www.cdc.gov/nip/publications/acip-list.htm). Consult the ACIP statement for recommendations for administering Td as prophylaxis in wound management (http://www.cdc.gov/mmwr/preview/mmwrhtml/00041645.htm).

2. Human Papillomavirus (HPV) vaccination. HPV vaccination is recommended for all women aged ≤26 years who have not completed the vaccine series. Ideally, vaccine should be administered before potential exposure to HPV through sexual activity; however, women who are sexually active should still be vaccinated. Sexually active women who have not been infected with any of the HPV vaccine types receive the full benefit of the vaccination. Vaccination is less beneficial for women who have already been infected with one or more of the four HPV vaccine types. A complete series consists of 3 doses. The second dose should be administered 2 months after the first dose; the third dose should be administered 6 months after the first dose. Vaccination is not recommended during pregnancy. If a woman is found to be pregnant after initiating the vaccination series, the remainder of the 3-dose regimen should be delayed until after completion of the pregnancy.

3. Measles, Mumps, Rubella (MMR) vaccination. *Measles component:* adults born before 1957 can be considered immune to measles. Adults born during or after 1957 should receive ≥ 1 dose of MMR unless they have a medical contraindication, documentation of ≥ 1 dose, history of measles based on health-care provider diagnosis, or laboratory evidence of immunity. A second dose of MMR is recommended for adults who 1) have been recently exposed to measles or in an outbreak setting; 2) were previously vaccinated with killed measles vaccine; 3) have been vaccinated with an unknown type of measles vaccine during 1963–1967; 4) are students in postsecondary educational institutions; 5) work in a health-care facility, or 6) plan to travel internationally. Withhold MMR or other measles-containing vaccines from HIV-infected persons with severe immunosuppression. *Mumps component:* adults born before 1957 can generally be considered immune to mumps. Adults born during or after 1957 should receive 1 dose of MMR unless they have a medical contraindication, history of mumps based on health-care provider diagnosis, or laboratory evidence of immunity. A second dose of MMR is recommended for adults who 1) are in an age group that is affected during a mumps outbreak; 2) are students in postsecondary educational institutions; 3) work in a health-care facility; or 4) plan to travel internationally. For unvaccinated health-care workers born before 1957 who do not have other evidence of mumps immunity, consider giving 1 dose on a routine basis and strongly consider giving a second dose during an outbreak. *Rubella component:* administer 1 dose of MMR vaccine to women whose rubella vaccination history is unreliable or who lack laboratory evidence of immunity. For women of childbearing age, regardless of birth year, routinely determine rubella immunity and counsel women regarding congenital rubella syndrome. Do not vaccinate women who are pregnant or who might become pregnant within 4 weeks of receiving vaccine. Women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the health-care facility.

4. Varicella vaccination. All adults without evidence of immunity to varicella should receive 2 doses of varicella vaccine. Special consideration should be given to those who 1) have close contact with persons at high risk for severe disease (e.g., health-care workers and family contacts of immunocompromised persons) or 2) are at high risk for exposure or transmission (e.g., teachers of young children; child care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; non-pregnant women of childbearing age; and international travelers). Evidence of immunity to varicella in adults includes any of the following: 1) documentation of 2 doses of varicella vaccine at least 4 weeks apart; 2) U.S.–born before 1980 (although for health-care workers and pregnant women, birth before 1980 should not be considered evidence of immunity); 3) history of varicella based on diagnosis or verification of varicella by a health-care provider (for a patient reporting a history of or presenting with an atypical case, a mild case, or both, health-care providers should seek either an epidemiologic link with a typical varicella case or evidence of laboratory confirmation, if it was performed at the time of acute disease); 4) history of herpes zoster based on health-care provider diagnosis; or 5) laboratory evidence of immunity or laboratory confirmation of disease. Do not vaccinate women who are pregnant or might become pregnant within 4 weeks of receiving the vaccine. Assess pregnant women for evidence of varicella immunity. Women who do not have evidence of immunity should receive dose 1 of varicella vaccine upon completion or termination of pregnancy and before discharge from the health-care facility. Dose 2 should be administered 4–8 weeks after dose 1.

5. Influenza vaccination: *Medical indications:* chronic disorders of the cardiovascular or pulmonary systems, including asthma; chronic metabolic diseases, including diabetes mellitus, renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or HIV); any condition that compromises respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration (e.g., cognitive dysfunction, spinal cord injury, or seizure disorder or other neuromuscular disorder); and pregnancy during the influenza season. No data exist on the risk for severe or complicated influenza disease among persons with asplenia; however, influenza is a risk factor for secondary bacterial infections that can cause severe disease among persons with asplenia. *Occupational indications:* health-care workers and employees of long-term–care and assisted living facilities. *Other indications:* residents of nursing homes and other long-term–care and assisted living facilities; persons likely to transmit influenza to persons at high risk (i.e., in-home household contacts and caregivers of children aged 0–59 months, or persons of all ages with high-risk conditions); and anyone who would like to be vaccinated. Healthy, nonpregnant persons aged 5–49 years without high-risk medical conditions who are not contacts of severely immunocompromised persons in special care units can receive either intranasally administered influenza vaccine (FluMist®) or inactivated vaccine. Other persons should receive the inactivated vaccine.

Footnotes

6. Pneumococcal polysaccharide vaccination. *Medical indications:* chronic disorders of the pulmonary system (excluding asthma); cardiovascular diseases; diabetes mellitus; chronic liver diseases, including liver disease as a result of alcohol abuse (e.g.,cirrhosis); chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection [vaccinate as close to diagnosis as possible when CD4 cell counts are highest], leukemia, lymphoma, multiple myeloma, Hodgkin disease, generalized malignancy, organ or bone marrow transplantation); chemotherapy with alkylating agents, antimetabolites, or high-dose, long-term corticosteroids; and cochlear implants. *Other indications:* Alaska Natives and certain American Indian populations and residents of nursing homes or other long-term–care facilities.

7. Revaccination with pneumococcal polysaccharide vaccine. One-time revaccination after 5 years for persons with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection, leukemia, lymphoma, multiple myeloma, Hodgkin disease, generalized malignancy, or organ or bone marrow transplantation); or chemotherapy with alkylating agents, antimetabolites, or high-dose, long-term corticosteroids. For persons aged ≥65 years, one-time revaccination if they were vaccinated ≥5 years previously and were aged <65 years at the time of primary vaccination.

8. Hepatitis A vaccination. *Medical indications:* persons with chronic liver disease and persons who receive clotting factor concentrates. *Behavioral indications:* men who have sex with men and persons who use illegal drugs. *Occupational indications:* persons working with hepatitis A virus (HAV)–infected primates or with HAV in a research laboratory setting. *Other indications:* persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (a list of countries is available at http://www.cdc.gov/travel/diseases.htm) and any person who would like to obtain immunity. Current vaccines should be administered in a 2-dose schedule at either 0 and 6–12 months, or 0 and 6–18 months. If the combined hepatitis A and hepatitis B vaccine is used, administer 3 doses at 0, 1, and 6 months .

9. Hepatitis B vaccination. *Medical indications:* Persons with end-stage renal disease, including patients receiving hemodialysis; persons seeking evaluation or treatment for a sexually transmitted disease (STD); persons with HIV infection; persons with chronic liver disease; and persons who receive clotting factor concentrates. *Occupational indications:* health-care workers and public-safety workers who are exposed to blood or other potentially infectious body fluids. *Behavioral indications:* sexually active persons who are not in a long-term, mutually monogamous relationship (i.e., persons with >1 sex partner during the previous 6 months); current or recent injection-drug users; and men who have sex with men. *Other indications:* household contacts and sex partners of persons with chronic hepatitis B virus (HBV) infection; clients and staff members of institutions for persons with developmental disabilities; all clients of STD clinics; international travelers to countries with high or intermediate prevalence of chronic HBV infection (a list of countries is available at http://www.cdc.gov/travel/diseases.htm); and any adult seeking protection from HBV infection. Settings where hepatitis B vaccination is recommended for all adults: STD treatment facilities; HIV testing and treatment facilities; facilities providing drug-abuse treatment and prevention services; health-care settings providing services for injection-drug users or men who have sex with men; correctional facilities; end-stage renal disease programs and facilities for chronic hemodialysis patients; and institutions and nonresidential daycare facilities for persons with developmental disabilities. *Special formulation indications:* for adult patients receiving hemodialysis and other immunocompromised adults, 1 dose of 40 µg/mL (Recombivax HB®) or 2 doses of 20 µg/mL (Engerix-B®).

10. Meningococcal vaccination. *Medical indications:* adults with anatomic or functional asplenia, or terminal complement component deficiencies. *Other indications:* first-year college students living in dormitories; microbiologists who are routinely exposed to isolates of *Neisseria meningitidis*; military recruits; and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of Sub-Saharan Africa during the dry season [December–June]), particularly if contact with local populations will be prolonged. Vaccination is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj. Meningococcal conjugate vaccine is preferred for adults with any of the preceeding indications who are aged ≤55 years, although meningococcal polysaccharide vaccine (MPSV4) is an acceptable alternative. Revaccination after 5 years might be indicated for adults previously vaccinated with MPSV4 who remain at high risk for infection (e.g., persons residing in areas in which disease is epidemic).

11. Selected conditions for which *Haemophilus influenzae* type b (Hib) vaccination may be used. Hib conjugate vaccines are licensed for children aged 6 weeks–71 months. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults with the chronic conditions associated with an increased risk for Hib disease. However, studies suggest good immunogenicity in patients who have sickle cell disease, leukemia, or HIV infection or have had splenectomies; administering vaccine to these patients is not contraindicated.

This schedule indicates the recommended age groups and medical indications for routine administration of currently licensed vaccines for persons aged ≥19 years, as of October 1, 2006. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (http://www.cdc.gov/nip/publications/acip-list.htm).

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at http://www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule and contraindications for vaccination is also available at http://www.cdc.gov/nip or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 24 hours a day, 7 days a week.

Approved by the Advisory Committee on Immunization Practices, the American College of Obstetricians and Gynecologists, the American Academy of Family Physicians, and the American College of Physicians

Source: CDC Website

Appendix C

BUMED NOTICE 6230

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
2300 E STREET NW
WASHINGTON DC 20372-5300

Canc frp: Dec 2005
IN REPLY REFER TO
BUMEDNOTE 6230
BUMED-M3F4
21 Dec 2004

BUMED NOTICE 6230

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical Department Personnel

Subj: TO PROVIDE IMMUNIZATION REQUIREMENTS AND RECOMMENDATIONS AND TO INTRODUCE ADULT AND CHILD IMMUNIZATIONS RECORD FORMS

Ref:
(a) BUMEDINST 6230.15
(b) OPNAVINST 6120.3
(c) ASD(HA) memo of 29 Oct 97 (NOTAL)
(d) CNO WASHINGTON DC 121410Z Apr 04
(e) CDC, MMWR, Feb. 8, 2002;51 (RR-2); 1-36.
(f) CDC, MMWR, Apr. 9, 1993;42 (RR-4); 1-18.
(g) CDC, MMWR, Sep. 6, 1996;45 (RR-12); 1-35.
(h) BUMED WASHINGTON DC 091444Z Jun 00
(i) BUMED WASHINGTON DC 281951Z Aug 01
(j) SECNAVINST 6230.4
(k) CDC, MMWR, Jan. 8, 1999;48 (RR-1); 1-21.

Encl:
(1) Index of Current Recommendations of the Advisory Committee on Immunization Practices (ACIP)
(2) Guidelines for Timing and Spacing of Immunobiologics
(3) National Vaccine Injury Compensation Program Vaccine Injury Table
(4) Vaccine Adverse Event Reporting System Form VAERS-1(FDA)
(5) Recommended Childhood and Adolescent Immunization Schedule - United States, 2004
(6) Adult Dosages and Routes of Vaccine Administration
(7) Recommended Adult Immunization Schedule - United States, 2003-2004
(8) Preventive Medicine Points of Contact and Information Resources
(9) Civilian Immunization Information Resources
(10) Terms, Abbreviations, and Acronyms

1. Purpose. To update requirements and recommendations for administering immunizing agents to Navy personnel, beneficiaries, civilian employees, and volunteers. To implement the forms, NAVMED 6230/4 (1-2004), Adult Immunizations Record, and NAVMED 6230/5 (1-2004), Child Immunizations Record.

BUMEDNOTE 6230

21 Dec 2004

2. Cancellation. BUMEDNOTE 6230 dated 20 Apr 1998, BUMEDNOTE 6230 dated 22 Apr 2002, NAVMED 6230/4 (11-2001), Adult Immunizations Record (Test Form), and NAVMED 6230/5 (11-2001), Child Immunizations Record (Test Form).

3. General Considerations

a. Immunizations and Chemoprophylaxis. Reference (a) provides basic guidance on immunizations and chemoprophylaxis. Requirements or recommendations of reference (a), not specifically modified by this notice, remain in effect.

b. BUMEDNOTE 6230 of 22 Apr 2002 directed Navy medical departments to document immunizations on the NAVMED 6230/4 (11-2001) (Test Form), Adult Immunizations Record, and NAVMED 6230/5 (11-2001) (Test Form), Child Immunizations Record. These forms were field-tested and found to provide excellent documentation of immunization information.

c. Vaccine Recipients

(1) This notice applies to Navy personnel on active duty, Navy recruits, Navy Reserve Component personnel, Navy Alert Forces, non-active duty beneficiaries, civilian employees, contract employees, civilian volunteers, and students who require occupationally indicated vaccination.

(2) Civilian personnel working under contract to the Navy must meet the requirements of this notice. Contractors must provide these immunizations to their employees. Immunization requirements must be addressed in Service contracts.

(3) Federal civilian employees serving the Military Services who are designated emergency-essential or are subject to rapid deployment have the same immunization requirements as active duty military personnel. Required immunizations and treatment related to adverse effects of vaccination will be provided without charge at military activities.

d. Standard of Care. Before administering immunizing agents, health care providers should be familiar with the contents of this notice and the appropriate package insert. Vaccine administration policies should follow current Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP) recommendations, unless specifically directed otherwise in this notice, or subsequent directives. Enclosure (1) is an index of ACIP recommendations, which include routine immunization schedules for all age groups. The CDC recommended childhood and adolescent vaccination schedule is revised annually and is published in January. Recommendations for vaccination of adolescents and adults are revised less frequently. Influenza vaccine recommendations are published annually. The CDC's ACIP vaccine

recommendations and immunization schedules can be accessed from the CDC's National Immunization Program Web site at http://www.cdc.gov/nip.

e. Immunization Program Assessment. It is recommended that all commands holding medical records conduct a periodic review of immunization practices in order to ensure current standards of care and documentation. The self-assessment should include reviewing a representative sample of health records for documentation of compliance. Commands are encouraged to check their medical records against immunization entries in the DEERS. DEERS immunization entries can be checked through Navy Medicine Online (NMO). Commands should retain records of these assessments and of their efforts to improve vaccine coverage. Commands may obtain assistance regarding immunization program assessment from staff preventive medicine officers, military treatment facility (MTF) clinical epidemiologists or preventive medicine departments, the cognizant Navy Environmental and Preventive Medicine Unit (NEPMU), or the Navy Environmental Health Center (NEHC).

f. Immunization Status. Immunization status should be reviewed as part of each medical visit when vital signs are obtained and documented. Reference (b) directs that an immunization review will be done annually as part of the required Preventive Health Assessment. All personnel needing recommended immunizations should be immunized promptly, preferably during the same visit. Others should be encouraged to be immunized as soon as possible.

g. Immunization Documentation. Health care providers who administer immunizations, toxoids, and other immunobiologicals must record pertinent vaccine related information on the PHS 731 (Yellow Card), in an electronic database that transmits data to DEERS, and in the appropriate location in the health record. Do not use the DD 2766 form for recording immunizations because it does not accommodate entry of all required data. The new adult and child immunizations records, NAVMED 6230/4 (Rev. 1-2004) and NAVMED 6230/5 (Rev. 1-2004), have spaces for all required information.

(1) The required immunization information is: date, manufacturer, lot number, dose given, site and route of administration; the Vaccine Information Sheet (VIS) edition given (if required for that vaccine); the name, address, and title of the person administering the vaccine; and the MTF or other facility.

(2) If recruits do not receive an immunization due to either evidence of prior immunization or serological immunity, that information must be recorded on the Adult Immunizations Record (NAVMED 6230/4 (Rev. 1-2004)), on the PHS 731 (International Certificate of Vaccination) (Yellow Card) and in an electronic database that records that information in the DEERS.

(3) The PHS 731 (International Certificate of Vaccination) (Yellow Card) serves as the individual's official record of immunization. The PHS 731 should remain in the custody of the individual or legal guardian and should be updated at the time of immunization. This document may be required for travel to certain countries. Consult the cognizant NEPMU or local travel clinic for additional immunization-related information pertaining to international travel.

h. Automated Immunization Tracking

(1) Reference (c) directs immunization data for active duty service personnel are entered into DEERS. Reference (d) requires and provides guidance for submission of anthrax and smallpox immunization status reports.

(a) The command that administers the immunization is responsible for entering immunization data into the electronic tracking system, regardless of whether the administering activity is that recipient's parent command.

(b) The Shipboard Non-Tactical ADP Program (SNAP) Automated Medical System (SAMS) is the preferred Navy service electronic system for capturing immunizations. Automated tracking is required for all immunizations, including those given to contractors and civilians.

(c) Immunization data for Navy Reserve personnel will be tracked and reported through the Reserve Automated Medical Interim System, RAMIS. SAMS is used for tracking of immunizations in the Marine Corps Reserve.

(2) A central repository for all SAMS immunization data resides at the Naval Medical Information Management Center (NMIMC). MTFs and operational units will transfer electronic immunization data collected in SAMS on a weekly basis. Immunization data from the Naval Reserve will be transmitted directly to DEERS through the central interface. If electronic data transmission from a specific unit is not feasible, SAMS data may be saved to a 3.5-inch floppy disk and mailed to NMIMC. MTFs will have the capability to query the DEERS database through the immunization tracking system NavImmune to obtain immunization information on Service personnel in order to update the local SAMS database. Contact NavImmune to obtain access to the DEERS Immunization Compliance Reporting System (ICRS) Web site at gwparker@us.med.navy.mil, (301) 319-1094, or DSN 285-1094. The Immunization Tracking System (ITS) Web site address is https://imcenter.med.navy.mil/its.

(3) Customer support for SAMS is available. Phone numbers and e-mail addresses are: East coast (Norfolk) (757) 443-0741 or DSN 646-0741, e-mail samseast@scn.spawar.navy.mil; West coast (San Diego) (619) 556-9092 or DSN 526-9092, e-mail samswest@scn.spawar.navy.mil; Pacific (Pearl Harbor) (808) 471-4600

Appendix D

Executive Order 1335

For Immediate Release
Office of the Press Secretary
April 27, 2004

Executive Order: Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator

By the authority vested in me as President by the Constitution and the laws of the United States of America, and to provide leadership for the development and nationwide implementation of an interoperable health information technology infrastructure to improve the quality and efficiency of health care, it is hereby ordered as follows:

Section 1. Establishment.

(a) The Secretary of Health and Human Services (Secretary) shall establish within the Office of the Secretary the position of National Health Information Technology Coordinator.

(b) The National Health Information Technology Coordinator (National Coordinator), appointed by the Secretary in consultation with the President or his designee, will report directly to the Secretary.

(c) The Secretary shall provide the National Coordinator with appropriate staff, administrative support, and other resources to meet its responsibilities under this order.

(d) The Secretary shall ensure that the National Coordinator begins operations within 90 days of the date of this order.

Sec. 2. Policy. In fulfilling its responsibilities, the work of the National Coordinator shall be consistent with a vision of developing a nationwide interoperable health information technology infrastructure that:

(a) Ensures that appropriate information to guide medical decisions is available at the time and place of care;

(b) Improves health care quality, reduces medical errors, and advances the delivery of appropriate, evidence-based medical care;

(c) Reduces health care costs resulting from inefficiency, medical errors, inappropriate care, and incomplete information;

(d) Promotes a more effective marketplace, greater competition, and increased choice through the wider availability of accurate information on health care costs, quality, and outcomes;

(e) Improves the coordination of care and information among hospitals, laboratories, physician offices, and other ambulatory care providers through an effective infrastructure for the secure and authorized exchange of health care information; and

(f) Ensures that patients' individually identifiable health information is secure and protected.

Sec. 3. Responsibilities of the National Health Information Technology Coordinator.

(a) The National Coordinator shall, to the extent permitted by law, develop, maintain, and direct the implementation of a strategic plan to guide the nationwide implementation of interoperable health information technology in both the public and private health care sectors that will reduce medical errors, improve quality, and produce greater value for health care expenditures. The National Coordinator shall report to the Secretary regarding progress on the development and implementation of the strategic plan within 90 days after the National Coordinator begins operations and periodically thereafter. The plan shall:

(i) Advance the development, adoption, and implementation of health care information technology standards nationally through collaboration among public and private interests, and consistent with current efforts to set health information technology standards for use by the Federal Government;
(ii) Ensure that key technical, scientific, economic, and other issues affecting the public and private adoption of health information technology are addressed;
(iii) Evaluate evidence on the benefits and costs of interoperable health information technology and assess to whom these benefits and costs accrue;
(iv) Address privacy and security issues related to interoperable health information technology and recommend methods to ensure appropriate authorization, authentication, and encryption of data for transmission over the Internet;
(v) Not assume or rely upon additional Federal resources or spending to accomplish adoption of interoperable health information technology; and
(vi) Include measurable outcome goals.

(b) The National Coordinator shall:

(i) Serve as the Secretary's principal advisor on the development, application, and use of health information technology, and direct the Department of Health and Human Service's health information technology programs;

(ii) Ensure that health information technology policy and programs of the Department of Health and Human Services (HHS) are coordinated with those of relevant executive branch agencies (including Federal commissions) with a goal of avoiding duplication of efforts and of helping to ensure that each agency undertakes activities primarily within the areas of its greatest expertise and technical capability;

(iii) To the extent permitted by law, coordinate outreach and consultation by the relevant executive branch agencies (including Federal commissions) with public and private parties of interest, including consumers, providers, payers, and administrators; and

(iv) At the request of the Office of Management and Budget, provide comments and advice regarding specific Federal health information technology programs.

Sec. 4. Reports. To facilitate the development of interoperable health information technologies, the Secretary of Health and Human Services shall report to the President within 90 days of this order on options to provide incentives in HHS programs that will promote the adoption of interoperable health information technology. In addition, the following reports shall be submitted to the President through the Secretary:

(a) The Director of the Office of Personnel Management shall report within 90 days of this order on options to provide incentives in the Federal Employee Health Benefit Program that will promote the adoption of interoperable health information technology; and

(b) Within 90 days, the Secretary of Veterans Affairs and the Secretary of Defense shall jointly report on the approaches the Departments could take to work more actively with the private sector to make their health information systems available as an affordable option for providers in rural and medically underserved communities.

Sec. 5. Administration and Judicial Review.

(a) The actions directed by this order shall be carried out subject to the availability of appropriations and to the extent permitted by law.

(b) This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity against the United States, its agencies, its entities or instrumentalities, its officers or employees, or any other person.

GEORGE W. BUSH

THE WHITE HOUSE,

April 27, 2004.

Appendix E

NAVMED SDIEGO INST 6230.4A - Command Immunization Program

DEPARTMENT OF THE NAVY
NAVAL MEDICAL CENTER
34800 BOB WILSON DR.
SAN DIEGO, CALIFORNIA 92134-5000

IN REPLY REFER TO:
NAVMEDCEN SDIEGOINST 6230.4B
PFA
28 JAN 2000

NAVMEDCEN SDIEGO INSTRUCTION 6230.4B

From: Commander

Subj: COMMAND IMMUNIZATION PROGRAM

Ref: (a) BUMEDINST 6230.15
(b) Adult Immunization, Advisory Committee on Immunization Practices (ACIP), US Public Health Services (USPHS), current edition
(c) Health Information for International Travel, HHS, CDC, current edition

1. Purpose. To set policies, procedures, and responsibilities for this Command's Immunization Program, to include the Branch Medical Clinics.

2. Cancellation. NAVMEDCEN SDIEGOINST 6230.4A.

3. Background. Reference (a) identifies mandatory vaccinations for military personnel by personnel category. Both references (a) and (b) provide the backbone for the Immunization Program at this Command. In addition, Medical Department personnel must keep current on all Advisory Committee on Immunization Practices (ACIP) recommendations in references (a) and (c), for immunizing agents and requirements for international travel. It is also important to ensure that personnel working in the Immunization Clinics throughout the command read the most current data published in the Morbidity and Mortality Weekly Report (MMWR). The latest information and address for subscription of MMWR are available in references (a) and (b) or from the Center for Disease Control (CDC) web site at: www.CDC.gov.

4. Action. The responsibilities for immunization programs are defined as follows:

a. The Director for Medical Services and the Director for Branch Medical Clinic Operations, through their respective Immunization Clinics will:

(1) Ensure all provisions outlined in references (a) and (b) are achieved for members of this Command and personnel assigned to commands whose medical records are maintained by Naval Medical Center, San Diego.

(2) Collect data reflecting the number and type of immunizations administered, including any adverse reactions.

(3) Document compliance through medical records review systems and quality assurance reviews.

b. The Head, Preventive Medicine Department will:

(1) Provide technical advice related to vaccines, immunization procedures, and storage of supplies.

(2) Provide current health threat assessments based on disease prevalence, recommending further medical attention and prophylaxis.

(3) Provide recommendations regarding revisions of the Immunization Program and necessary practices in accordance with current medical standards.

(4) Maintain oversight of the command's Immunization Program and ensure compliance with all Bureau of Medicine and Surgery instructions and current ACIP recommendations through semi-annual immunization record reviews. Data from such reviews will be used to make recommendations on improving compliance rates.

(5) Coordinate, or assist in coordinating mass immunizations including: influenza, or unit pre-deployment on an as needed basis.

W. M. ROBERTS
Acting

Distribution:
Lists 1 and 3

Appendix F

TRICARE Outpatient Clinic Chula Vista Transcription Project

Immunization is a cost-effective and widely accepted means of preventing diseases, and is recommended for all age-groups and those with chronic health problems who are particularly susceptible to infectious diseases. Medical advances in technology have made it possible to produce effective and safe immunizations to protect the population against preventable diseases. But despite this proven fact, mortality and morbidity from vaccine preventable diseases remains high. Based on many studies, missed opportunities to vaccinate during primary care visits is one of reasons for the high rate.

Background

Central to the mission of the Directorate of Occupational Health and Preventive Medicine is proactive prevention. The directorate is incessant in its pursuit of exploring ways to improve preventive care provided to our beneficiaries. One of areas identified for improvement is the delivery of vaccinations to important segments of our population. The transcription project at TRICARE Outpatient Clinic Chula Vista is an important step in improving the quality of immunization services provided at Naval Medical Center San Diego. This project is a critical first step to automate immunization records thus allowing for accurate reporting and tracking of immunization data. Despite the existence of office systems that can be used for automation, NMCSD continues to utilize paper based immunization records which do not always accurately report patient immunization status. The practice of using multiple forms to record immunization data has led to problems in determining individual immunization needs during outpatient visits. Providers often missed opportunities to vaccinate during primary care encounters due to scattered, inaccurate or missing immunization records.

This project was launched in June of 2006 and the goal was to transcribe all hard copy immunization records into AHLTA. Ultimately, we would like to see AHLTA used as the central repository for all immunization information. TOC Chula Vista is used as the pilot site and if this project is deemed to be successful, the project will be implemented command-wide. When the project was begun there were approximately 21,000 records pending to be transcribed. As of January 27, 2007, over 20,000 records have been transcribed. This project should be fully completed by the end of January.

Immunization Status Screen at Every Primary Care Visits

Random check of patient records revealed a prevalence of missed opportunities to vaccinate during primary care patients. Of the 10 patient records pulled on January 23, 2007 for patients who were seen at TOC Chula Vista, all were identified to be opportunities to vaccinate. But because of the lack of process in place to check each patient's vaccination status, the opportunities were missed. This highlights the need to implement changes incorporating vaccination status check as standard of care for each visit.

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Current Process			Proposed Process		
Patient	Type	Time (Sec)	Patient	Type	Time (Sec)
1	A	120	1	A	120
2	A	180	2	A	180
3	A	180	3	A	180
4	A	120	4	A	120
5	A	120	5	A	120
6	A	180	6	A	120
7	P	120	7	A	120
8	A	120	8	A	120
9	P	120	9	A	120
10	A	120	10	P	180
11	A	120	11	P	180
12	A	120	12	A	180
13	A	120	13	A	120
14	A	120	14	A	180
15	A	120	15	A	180

16	A	120	16	A	180
17	P	120	17	P	180
18	A	120	18	A	180
19	A	120	19	A	180
20	A	180	20	A	180
Average		**132**	**Average**		**156**
SD		**25**	**SD**		**30**

Exhibit 1. Time-survey results to compare current check-in process against proposed Process

Initial recommendation was made to integrate immunization status check using AHLTA during patient check-in. The proposed process will include checking of immunization using the immunizations module in AHLTA. Because of staffing issues, a time-survey was conducted to investigate if such change will create undue burden on the front desk staff which might call for additional staffing. As revealed in Exhibit 1, no significant time difference was observed in the completion of the current check-in process when compared to the proposed process. The averaged time completion for the current process using a pool of 20 patients was 132 seconds. The average for the proposed process using a pool of the same number of patients was 156 seconds. The average time difference was only 24 seconds.

While the TOC Chula Vista leadership agreed that changes were needed, they were concerned that the front desk staff lacks the required training and skill set to perform the check. Further, there may be legal ramifications for allowing administrative clerks to perform clinically-oriented tasks. The task should be delegated to staffs with clinical background such as the nursing assistants (CNA) or license practical nurses (LPN). It was therefore suggested that the most ideal opportunity to check vaccination status during primary care visits is right before the patient sees the healthcare provider, specifically during vitals signs check (Exhibit 1 – note highlight). During this period, the CNA or LPN can screen immunization status using AHLTA, hard copy health records, PHS 731 and patient interview. This change will require the creation of a new standard operating procedure that will outline the steps required to perform the task as well the parameters for screening. In addition, immunizations module training for CNAs and LPNs is also needed since none of them are familiar with the module.

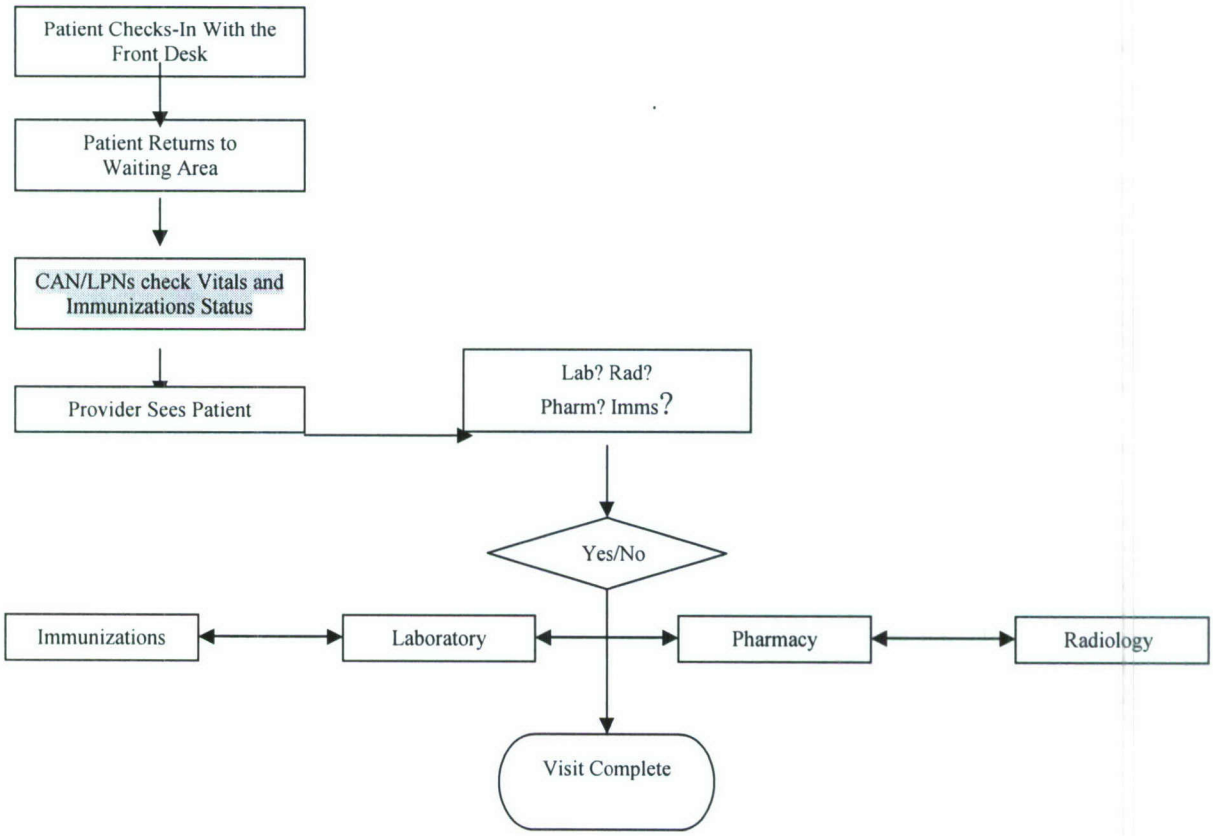

Exhibit 2. Proposed TOC Chula Vista process map for patient visits.

Specific Action Items

a) Immunization Program Manager and ENS Nevins meet with TOC Leadership to discuss details of implementation (completed)
b) Immunizations Module Training (AHLTA) for nursing staff (CNA/LPN) (completed)
c) Standard Operating Procedure (SOP) for new process and parameters for screening (not required)
d) Telephone announcement on the appointment line encouraging patients to bring yellow shot cards (PHS 731)
e) Post-Implementation Survey (to be done end of April 07)

NTC Action Items

a) Meet with Leadership (completed)
b) Pilot Pneumovax and Zoster (ongoing)
c) AHLTA Training (to be completed March 31)
d) Pilot transcription of >65 y.o records (will start April 2)